JULY, 1959 • 35c

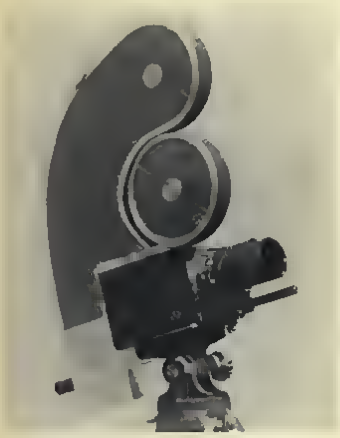
AMERICAN Cinematographer

SERVING ALL FIELDS OF MOTION PICTURE PRODUCTION

The Magazine of Motion Picture Photography

Photographing "Anatomy of a Murder"

A lighter camera for TV news cameramen



Film processed as fast as it is shot

Genius with a camera

. . . plus Questions & Answers, What's New, Industry News, Etc.

EASTMAN

PROFESSIONAL
MOTION PICTURE

FILMS

W. J. GERMAN, Inc.

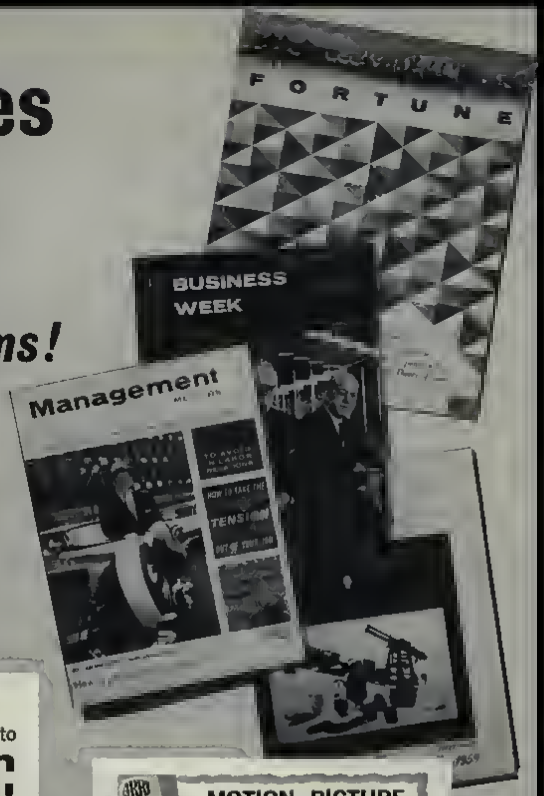
6677

SANTA MONICA BOULEVARD
HOLLYWOOD 38, CALIFORNIA

HOllywood 4-6131

ARRIFLEX® promotes your business...

with ads directed to those who need motion picture films!



Throughout 1959, Arriflex advertising will be seen regularly by the nation's top management personnel Fortune, Business Week, Management Methods, and Scientific American magazines will carry the message to a combined circulation of nearly 1,000,000 readers.

A milestone in ARRIFLEX advertising this campaign is designed to perform a pre-eminent service to cinematography as a whole, and the professional producer in particular A list of professional producers, who use ARRIFLEX to film quality motion pictures, accompanies the literature requested by potential motion picture users

In this manner we say "Thanks" to you, the professional producers who have overwhelmingly accepted ARRIFLEX, and helped to make it "the choice of professionals all over the world "

MOTION PICTURE

FILMS

are the best means to

sell ... teach ... influence!

Just a few of the hundreds of satisfied Arriflex users

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Boeing Airplane Company
Bendix Aviation
Chase Manhattan Bank
Chrysler Corporation
Cook Electrical Research
Dow Corning Corporation
E. I. DuPont de Nemours
General Electric Co.
General Motors
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Lockheed Aircraft Corp.
North American Aviation
Pan American Airways
Remington Rand
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Time, Inc.
U.S Bureau of Standards
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ARRIFLEX® 16

Find out why the motion picture departments of the nation's leading companies and professional film producers prefer the ARRIFLEX® 16.. the world's most versatile, **money saving** production camera.

FREE! Mail this coupon for literature and list of professional industrial motion picture producers, to:

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company

address

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Find out why the motion picture departments of the nation's leading companies and professional film producers prefer the ARRIFLEX® 16 . . . the world's most versatile, **money saving** production camera.

Write for FREE literature and list of professional industrial motion picture producers

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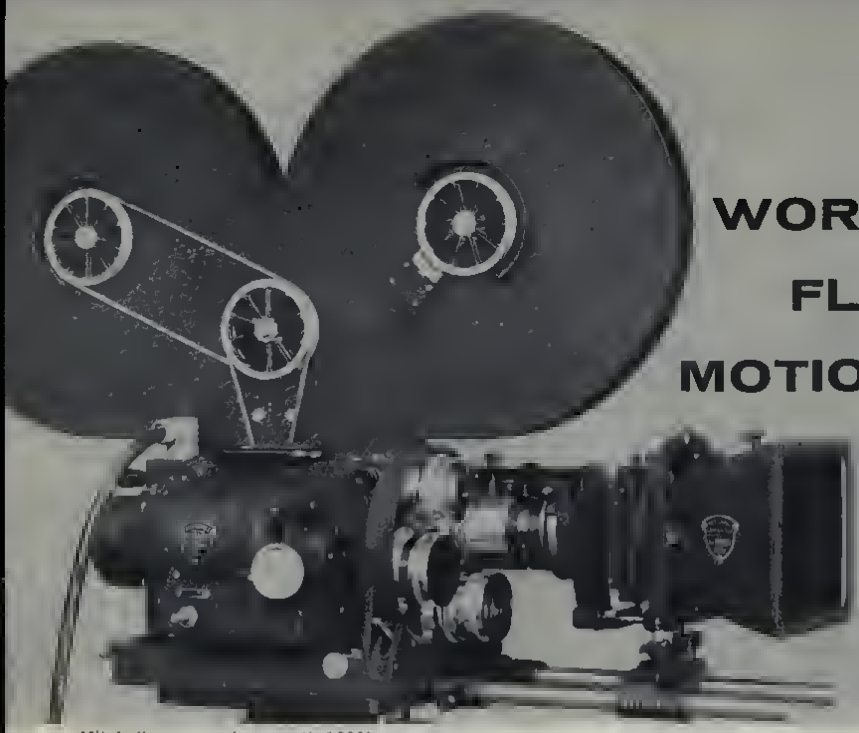

Mitchell camera shown with 1200′ magazine

WORLD'S MOST FLEXIBLE MOTION PICTURE CAMERA

MITCHELL

No other motion picture camera is today used for such a broad range of exacting film making as is the Mitchell. The versatile speed of the camera, ranging from 1 to 128 frames per second, plus 14 exclusive features equip the Mitchell for an impressively broad range of cinematography. A single Mitchell can meet the requirements for finest quality TV commercials, feature productions, public relations, sales and training films, progress and report films, plus critical research and development data and record photography.

Mitchell cameras include: 35mm and 16mm cameras; 70mm 2¼ x 2¼ high speed cameras; and 70mm, 65mm and standard aperture cameras.

For information, write on your letterhead—please indicate which model camera your request concerns.

GENERAL ELECTRIC uses Mitchell for wide range of work, including slide films.

BUD WILKINSON PRODUCTIONS shoots its award-winning TV Sports Series with the Mitchell

KEARNEY & TRECKER films first fully automated tape controlled combination machine tool with the firm's Mitchell camera.

LOCKHEED AIRCRAFT CORP., uses Mitchells continuously throughout plant, here records jet flight.

85% of All Professional Motion Pictures Shown Throughout the World Are Filmed with Mitchell Cameras

Mitchell Camera Corporation

AMERICAN
Cinematographer

July, 1959 • Vol. 40, No. 7

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Marion Hutchins

CONTRIBUTING EDITORS
Derek Hill
Joseph Henry
Clifford Harrington
Joseph V Mascelli
Herb A. Lightman

TECHNICAL EDITOR
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ON THE COVER

A composite cover layout this month represents four of the eight important articles contained in this issue

• *In This Issue*

FILMING "ANATOMY OF A MURDER" IN THE STORY'S ACTUAL LOCALE 415
Limited working space and restricted lighting accommodations made location shooting a real challenge for director of photography Sam Leavitt, ASC.

THE ULTIMATE IN TV NEWS CAMERA PORTABILITY 420
How one TV news cameraman solved the problem of carrying a bulky camera and sound equipment. By Bruce Palmer.

EXIT RIGHT, ENTER LEFT 422
Joseph V. Mascelli tells the importance of directional continuity in photographing a motion picture.

GENIUS WITH A CAMERA 424
With only limited experience with a 16mm camera, Michael Neyman tackled a full-scale 35mm feature film, using all professional equipment. By Clifford V. Harrington.

THE ARRIFLEX 35 426
Fourth in series of articles on professional motion picture cameras describes attributes of this popular German-made camera.

INSTANTANEOUS FILM PROCESSOR 429
Develops motion picture film as fast as it's shot.

AERIAL IMAGE AND ANIMATION 430
How TV commercial producers combine live action with animation using new "underneath projection" unit. By Vern W. Palen.

DUPLICATING 16MM FILMS 432
How to use a 16mm sound projector as a printer to dupe picture and sound track. By James Oswald

• *Features*

INDUSTRY NEWS 390
News briefs of industry activities and progress.

WHAT'S NEW IN EQUIPMENT, ACCESSORIES, SERVICES 394
Things that are new for makers of motion pictures.

HOLLYWOOD BULLETIN BOARD 400
News and pictures of ASC doings, its members and industry personalities

TECHNICAL QUESTIONS AND ANSWERS 403
Reader's questions answered by experts

PHOTOGRAPHIC ASSIGNMENTS 408
Where and what TV and feature film photographers were shooting last month.

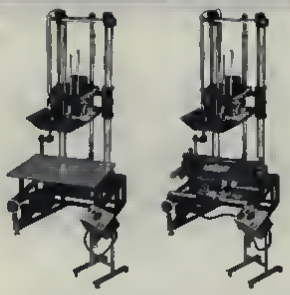
BOOKLETS, CATALOGS AND BROCHURES 414
Report on new literature related to motion picture production.

EDITORIAL AND BUSINESS OFFICE: 1782 NORTH ORANGE DRIVE, HOLLYWOOD 28, CALIFORNIA. TELEPHONE: HOLLYWOOD 7-2135. AMERICAN CINEMATOGRAPHER established 1920, is published monthly by the A. S. C Agency, Inc., 1782 N. Orange Dr., Hollywood 28, Calif. SUBSCRIPTION: United States and Canada, $4.00 per year; Foreign, including Pan American Union, $5.00 per year. Single copies 35 cents; back numbers 45 cents, foreign single copies, 45 cents; back numbers, 55 cents. Advertising rates on application. Copyright 1959 by A. S. C Agency, Inc. Second class postage paid at Los Angeles, California

New!

PACKAGE PROGRAMS

OXBERRY MASTER SERIES



FOR SLIDE-FILMSTRIP

OXBERRY AUTOFOCUS SLIDE-FILMSTRIP STAND Model FS-4300

This Master Series Stand has been designed for high speed top quality film strip production. Autofocus combined with automatic rackover and lamp that projects aperture onto table top are invaluable in quickly positioning various sized pieces of art work. Receives up to 35" art work. Accessories may be ordered to include animation components, other lenses, double aperture shuttle, top lighting, etc.

BASIC STAND: Welded steel base, ground steel 4½" diameter dual columns. Ball bearing camera carriage, manual drive. Four sided zoom scale. Shadowboard. Fixed table top 36" x 48", has 9" x 12" hole to accept with removable glass and wood inserts. Overall height 114", width 48", depth 58".

CAMERA: OXBEAAY 35mm with rackover and viewfinder. Fixed pin registration, 47mm lens, Actofocus 400 II magazine, automatic take-up and single speed stop motion motor. Price complete $9,100

FOR ANIMATION

OXBERRY AUTOFOCUS ANIMATION STAND Model MP-4220

This is a standardized package, not incorporating all the basic requirements necessary for shoot-ing full animation. A full line of accessories available for individual requirements. The difference between this unit and the OXBERRY Custom stand is primarily on rarely used special features.

BASIC STAND: Welded steel base, ground steel 4½" diameter dual columns. Ball bearing camera carriage, manual drive. Four sided zoom scale. Shadowboard. Height 114", width 48", depth 58".

COMPOUND: 28" x 34" table top. Two 12-field peg tracks, hand wheel controlled with counters and locks. Two 18-field "push type" peg tracks calibrated in 20ths. 9" x 12" cut-out in table top for underlighting. Ball bearing compound movements, N.S., E.W. and 360° rotation. All movements have handwheel control with counters and locks. Gimbal mounted platen with 12 field, 12 field glass.

CAMERA: OXBERRY 35mm with fixed pin registration, 47mm lens, Actofocus, Automatic take-up, Single speed stop motion motor. Straight through viewing device. 400-ft. 35mm magazine. Price complete $10,200

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38 Hudson Street, New Rochelle, N.Y.

INDUSTRY NEWS

News briefs of industry activities, products and progress

An "Oscar" award for achievement in newsreel coverage is being considered by The Academy of Motion Picture Arts and Sciences. Subject is to get an airing before the Academy's Board of Governors sometime this month.

Today, only two newsreel companies are in operation, whereas there were five before the advent of television. At the present time 20th Century-Fox produces Movietone News and News of the Day produces the Universal Newsreel for theatres.

• • •

Hollywood cameramen, at their June Union meeting, considered a proposal that members of production crews working on theatrical and TV films be rotated so they could work together with various other members and thus increase their knowledge and improve their capabilities. At present it is the practice for most studios to put the same crews together on one production after another.

The move is not a "spread the work" proposal, according to Herb Aller, business manager of Local 659, IATSE, who pointed out that one prominent Hollywood TV film company recently inaugurated the practice with excellent results.

• • •

Hollywood is about to begin the biggest TV film production year in its history. Where only a few years ago the future of filmed programs for television was considered dubious, films will constitute 70% of prime evening programming by the major networks, beginning this fall.

According to survey made by *Daily Variety*, industry trade paper, over $170,000,000 worth of new TV films will go before the cameras during the next twelve months.

• • •

A single flashbulb designed especially as an illumination source for high-speed cinematography and capable of exposing some 37 feet of motion picture film at 1,000 frames per second, or 75 feet at 2,000 frames a second, is announced by Sylvania Electric Products, Inc., New York, N.Y.

NEW SYLVANIA flashbulb has flash interval of 1/75 seconds—sufficient to expose 37 feet of film at 1,000 frames per second

Known as Floodflash FF-33, average flash duration of the new lamp is 1.75 seconds — more than 100 times longer than that of the popular miniature flashbulbs used by amateur and press photographers.

The lamp is said to be ideally suited for use in high-speed motion picture studies, such as those conducted in industrial and military research laboratories. Floodflash lamps may be fired individually or in sequence to provide a high-level light source without the heat that usually accompanies the use of photofloods or other photographic lamps in such work. In addition, problems created by bulky floodlamp power supplies and line cords in remote areas are eliminated.

Floodflash illuminated high-speed motion pictures provide accurate and valuable motion studies of the performance of highly mechanized or automated production equipment, easier, faster and at less cost. Similar advantages exist when the lamps are used in making high-speed motion picture

Continued on Page 446

BROOKS CAMERAS
The House of Famous Brand Names

Prices subject to change without notice

COLORTRAN JUNIOR KIT

Here, in one handy package, you have the equivalent illumination of 3000 watts of current from a 15 ampere fuse! Compact kit fits any car, contains everything you'll need for perfect lighting — a studio in a suitcase! Includes 2 Groverlite heads with 8 foot aluminum stands. All units have barn doors and diffusion slots for light control **$208.50**

SENIOR KIT—produces equivalent of 5000 watts illumination from a 30 ampere fuse **$276.50**

SPOT KIT—Contains 3 spotlights with a Broad or Junior, plus 4 stands. Snoots and diffusion for spots **$313.25**

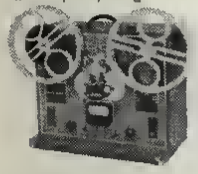
NEW ARRIFLEX 16

The only 16mm camera providing through-the-lens focusing and viewing during exposure. electric motor drive. Matte box cables **$1725.00**

16mm Xenon f/1.9 lens **$170.00**
25mm Xenon f/1.5 lens **$170.00**
75mm Xenon f/2 lens **$200.00**
Zoomar lens 1" to 3" f/2.8 for Arriflex **$570.00**
Arriflex, Model 16 Tripod **$175.00**
Same as above plug built-in buckle switch and motor cable lock **$1705.00**

MAGNASYNC TYPE 15 RECORDERS

Here is a complete, top-quality sound system, with playback monitor amplifier, loudspeaker and recorder, all built into one compact package



- Easy - to - read footage counter.
- Direct coupled, high resistance rotor torque motors.
- Simplified single-switch for all motor control functions
- Simultaneous film monitor through separate play head
- Will accommodate standard 1200-foot film reels **$1,385.00**

MAGNASYNC X-400 RECORDER

A complete sound system that weighs only 27 lbs! Features high gain "long-shot" microphone channel. Dialog equalization for "speech-music" selection. Self-contained playback system for "film direct" monitor. **$285.00**

Magnasync M-8 speaker, amplifier, and accessory case **$110.00**

4-position, high level mixing w/4½" Vumeter mounted in case **$305.00**

New single compact unit with playback speaker **$1385.00**

BOLEX H-16 REFLEX

Through the lens viewing and focusing while shooting

BOLEX 16mm LENSES

Pan Cinor 85—w/R F From 17.5 to 85mm—F2 ..... **$420.00**

Pan Cinor f/2.4 lens, focal lengths from 17½mm to 70mm **$269.50**

Pan Cinor 100 f/3.4 lens, focal lengths from 25mm to 100mm **$329.50**

Switar 10mm w. a. f/1.6 FM 2" to inf "C" mount. Visifocus **$149.50**

Switar 16mm w. a. f/1.8 FM 8" to inf "C" mount. Visifocus.. **$95.50**

Switar 25mm 1" f/1.5 FM 1½' to inf Visifocus **$115.00**

Yvar 100mm 4" f/3.3 tele 4-power magnification Focuses 8' to inf **$89.50**

The movie camera that gives you professional quality framing your eyes see exactly what your lens does Precision triple turret camera Variable speeds with fast Lytar f/1.9 lens **$360.00**

Yvar 16mm w. a. f/2.8 Focuses 1' to inf "C" mount Visifocus **$59.50**

Pizar 26mm 1" f/1.9 Focuses 1½' to inf "C" mount. Visifocus **$87.50**

Yvar 75mm 3" f/2.8 tele Focuses 5' to inf "C" mount Visifocus **$69.50**

Switar 25mm 1" f/1.4 Focuses 1½' to inf "C" mount. **$159.00**

Switar f/1.4 50mm 2" tele. lens. Ultra-high speed. Focuses 3' to inf **$169.50**

Yvar 150mm 6" f/4 tele lens 7½" length FM 13' to inf with case **$145.75**

PRECISION SOUND READERS

Simple threading polished stabilizer drum with needle bearings, with a surface which cannot damage film. Film rollers machined to conform with SMPTE standards, and equipped with oilless bearings. precision ground shafts . . . dimensions 6" x 6" x 7½"

Amplifier: 117 volts—60 cycle—A.C. Power output—4 watts Heavy duty Alnico V speaker . safety fused . prefocused socket . . pilot light 6 ft heavy duty cord

Optical Model 600—16mm and 35mm **$185.00**

Magnetic Model 700—16mm, 17.5mm, 35mm and ¼ inch **$198.00**

Optical-Magnetic Model 800—16mm, 35mm and ¼ inch **$259.50**

Optical Sound Reader Model 650 RL—16mm **$169.50**

AURICON CINE-VOICE II

16mm sound - on - film movie camera with professional heavy-duty 3-lens turret. Operates from house current or car battery. Available in a choice of models to suit a variety of filming requirements **$785.00**

CINE-VOICE I

Used **$495.00**

AURICON PRO-600

16mm optical-sound-on-film; self-blimped, sync motor drive for single or double-system recording. Electromatic take - up, film-flow without friction clutches or belts Various combinations of accessories available **$1458.25**

AURICON "SUPER 1200"

16mm sound-on-film camera (self-blimped) with 3-lens turret for "C" mount lenses. 1200 ft. capacity for 33 minutes recording time **$4140.00**

AURICON PRO-200 Was $1,495.00

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SUPER 1200

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Zeiss Moviscop Viewer **89.50**

Reader Viewer Combination **269.50**

CAMART TIGHTWIND ADAPTER

- Only Tightwind operating on BALL-BEARING roller
- Eliminates cinching or abrasions
- Winds film evenly—no holding
- Can be fitted to any 16mm or 35mm rewind

$29.00

CAMART FILM BIN

- Rectangular construction measures 30x34x12
- Fits easily into corners
- Easy to view strips of film
- Hard vulconized fiber with reinforced metal frame

- Complete bin rack-linen bag **$45.25**

With easy to roll wheels **$51.75**

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16mm and 35mm cameras in stock for immediate delivery. Arriflex 16 and 35mm soundproof blimps available 400' magazines, synchronous motors, new and used.

CAMART CORE DISPENSER

Attach to walls to keep plastic lab cores handy at all times.

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CAMERAS

MAURER, Type 05 rackover, 1 400' mag, 12v motor, sync motor finder, sunshade case, value over $6000 Like new **$2,995.00**

BERNOT-MAURER, prismatic rackover registration pin, 1 400' mag., sync motor finder sunshade, case, value $4000 Specially priced at **$1,195.00**

CINE SPECIAL model I w/200' mag, 2 lenses Auricon blimp w/sync motor, exceptionally fine condition, value over $1800 Special package deal **$845.00**

ARRIFLEX 35mm model I 3 lenses, 2 200' mags, wild motor sync motor case Value over $2500 Special package deal very fine condition **$995.00**

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MOVIOLA LF 16mm picture on 2x3 screen, take ups, counter, exceptionally fine, value over $650.00 Special **$395.00**

MOVIOLA model D, 35mm picture on 3" viewer, w/take ups, green like brand new list over $650 Special **$465.00**

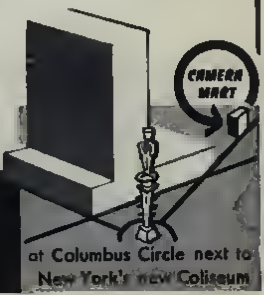
MOVIOLA model D as above, black, used, excellent, special **$275.00**

MOVIOLA model D as above, no take ups, very fine, special **$145.00**

LIGHTS

CAMART Combination Par lights, take Par 56/300 or Par 64/500 watt lamps Complete w/stand, barn daar, spill ring and scrim Value over $80.00 Brand new Special package price **$65.00**

CONE LIGHTS, 2KW complete with heavy duty stand, value over $165.00 Slightly used, special **$110.00**



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Exclusive *3 color* correction *critical sharpness & highest* contrast even at full aperture.
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C, Cine Special, Arriflex, Cameraflex, Eyemo, Mitchell barrelmounts, etc.
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AND 100% GUARANTEED
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5.7mm f/1.8*	35mm f/1.9	75mm f/2
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18.5mm f/2	40mm f/2.8	160mm f/2.5
20mm f/1.9*	40mm f/2	210mm f/2.8
25mm f/2	50mm f/2.8	300mm f/3.5
28mm f/2	50mm f/2	500mm f/5.6
32mm f/2.8	50mm f/1.3	

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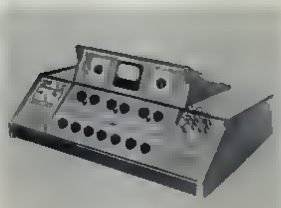


Mixing Console

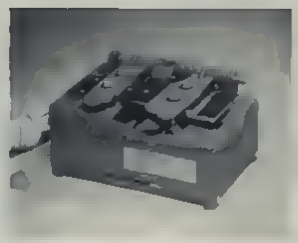
A miniaturized studio-type sound mixing console for motion picture re-recording applications is announced by Magnasync Mfg. Co., Ltd., North Hollywood, Calif. Unit features 6 input channels and patch bay selection of three program equalizers. Up to 3 plug-in microphone pre-amplifiers may be optionally added. Specs include: frequency response, 20 to 20,000 cps, ± 1.5 db; signal-to-noise ratio: 70 db below program level, distortion, less than 0.5% total harmonic; output: maximum 20 dbm; power consumption: 80 watts

Reflex Lens Housing

Karl Heitz, Inc., 480 Lexington Ave., New York, N. Y., announces the Kinoflex Reflex Housing designed for use with lenses 210mm focal length and longer. Housing fits between camera and lens, replacing equal section of lens mount. Within housing is movable prism for focusing and framing. Housing is available in C, Cine-Special, Arriflex, Eyemo, Cameraflex and other mounts. Price of Housing is $299.00; cradle support, $99.00

Hot Film Splicer

A new hot film splicer for 8mm and 16mm films is announced by Western Cine Service, Inc., 114 East 8th Ave., Denver, Colo. Salient feature is automatic motor-driven emulsion remover. Splice width is adjustable; dual film registration pins permit splicing sound films with perforations toward or away from operator, and platen temperature is automatically maintained at 99-101 degrees F. List price of splicer is $29.00.



Pro-Jr. Fluid Head

Camera Equipment Company, Inc., New York, N. Y., announces a new fluid tripod head designed for such cameras as Auricon Cine-Voice, Arriflex 16 and 35, Maurer 16, Kodak Cine-Special, Filmo, Eyemo and Camerette. Viscous fluid in head is unaffected by temperature ranging from 120° F. down to 20° below Zero. Special construction prevents "freeze ups" and limits mechanical friction. Positive locking levers are conveniently located for pan and tilt and allow for mechanical drag to supplement the fluid damping. Net weight of head is 8½ lbs. Price is $350.00 ■

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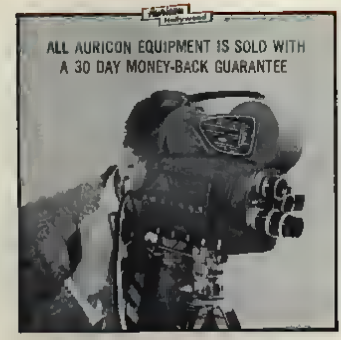

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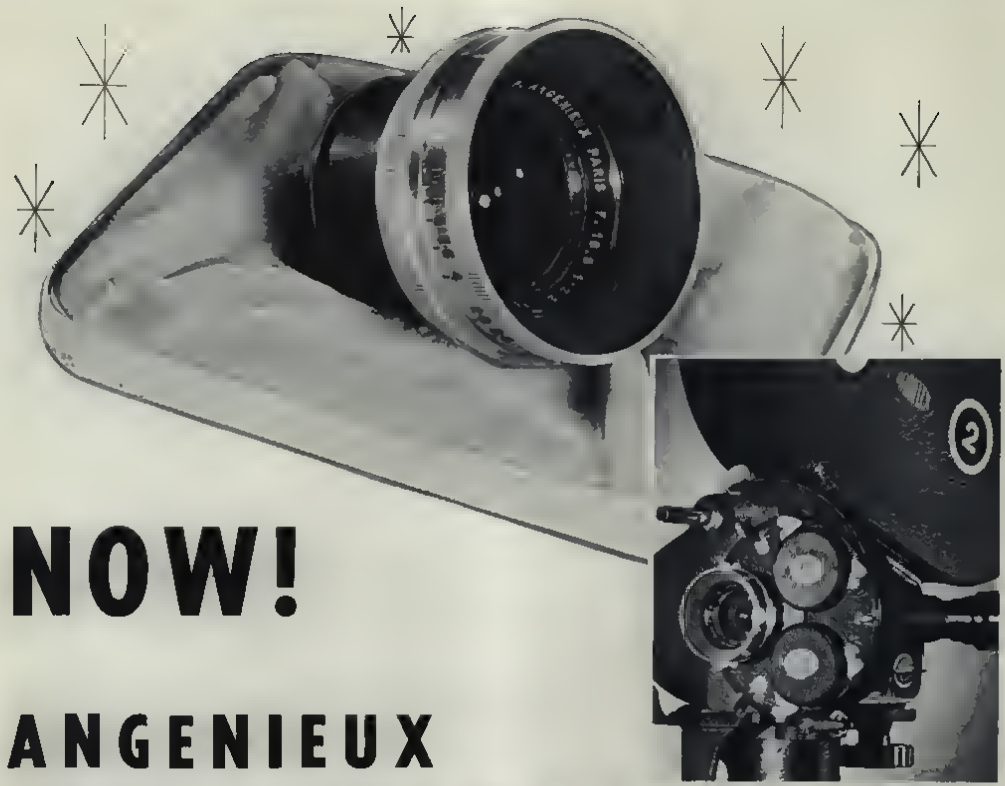

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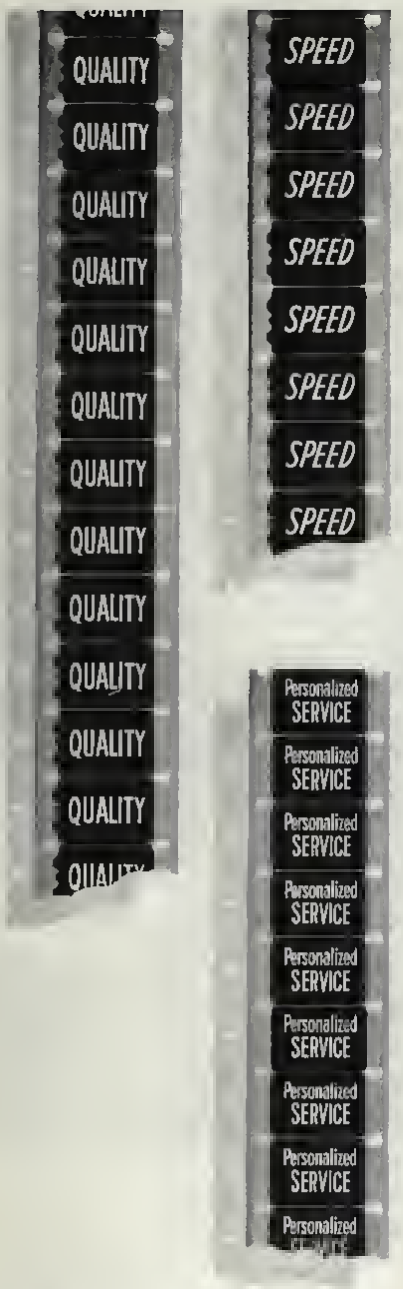

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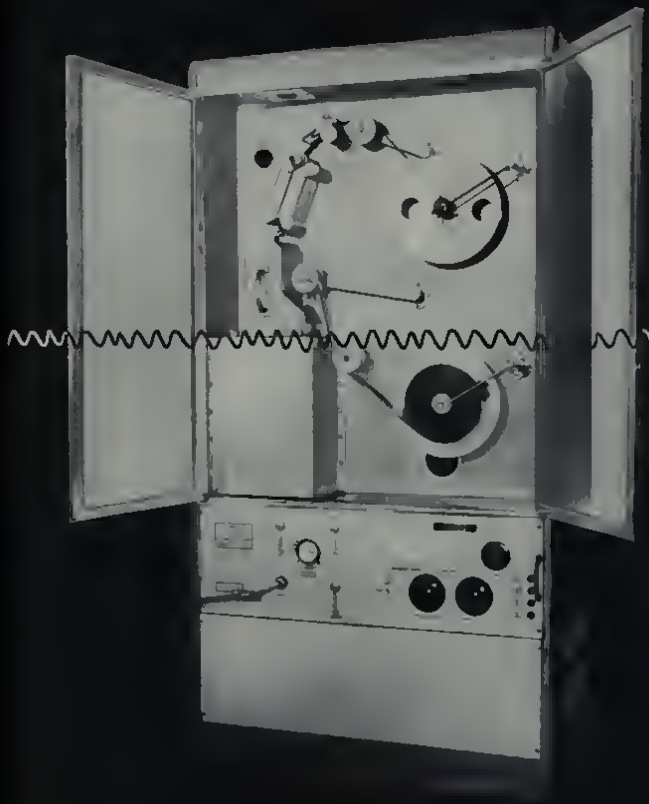

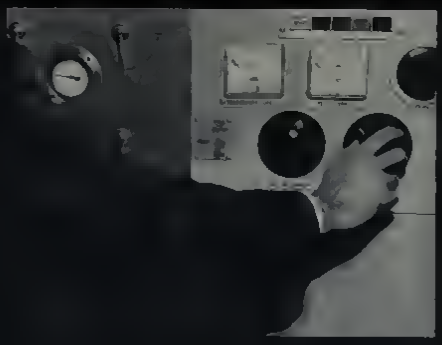

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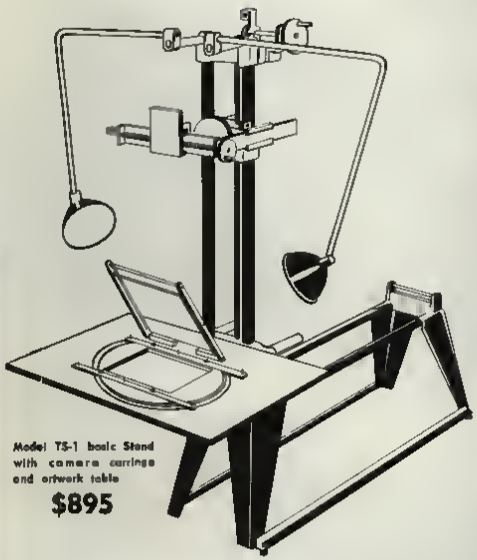

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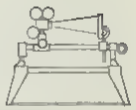

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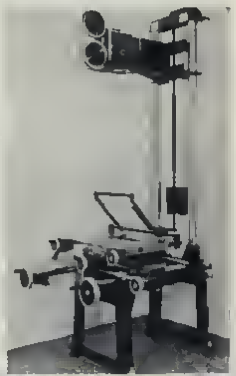

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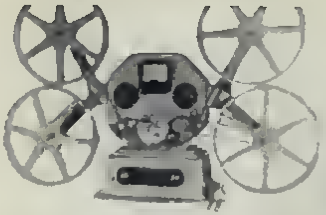

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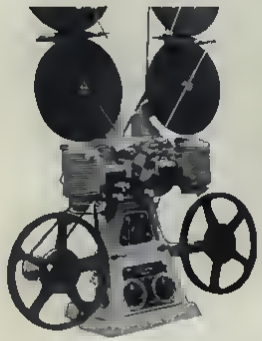

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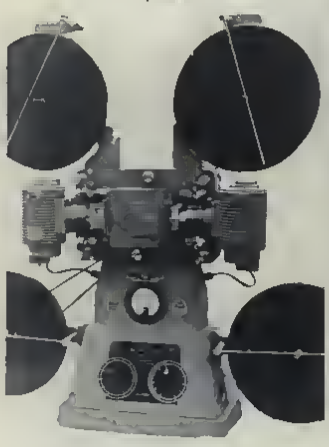

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NEWS AND PICTURES OF THE ASC, ITS MEMBERS AND INDUSTRY PERSONALITIES

PAUL KLINGENSTEIN, left, and Dr. Robert Richter, center, explain new automatic zoom lens for Arriflex cameras to Arthur Edeson, ASC. Klingenstein, who is president of Kling Photo Corp., New York, and Dr. Richter, head of German firm that makes the Arriflex cameras, were guests of the ASC at Society's May dinner-meeting at which time they demonstrated new features of improved Arriflex cameras. Edeson is a past-president of the ASC.

PROGRAM FEATURE of ASC's May meeting was informative talk on Eastman Kodak's new Type 5250 color negative by Vaughan Shaner, left, being introduced by ASC President Walter Strenge. Following talk, Shaner screened a test film made by Kodak which showed comparisons between old and new Eastman Color Negative, which is 1 stop faster.

PAUL KLINGENSTEIN, left, demonstrates simplicity of operation of Pan-Cinor zoom lens on an Arriflex 35mm camera to Joe MacDonald, ASC, Lathrop Worth, ASC, and Jack Rirns, of Birns & Sawyer, equipment dealers.

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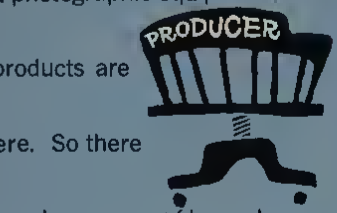

This is not intended as a slur on the many fine film makers who are not located in New York, Chicago and Hollywood The top Pros throughout the world are also loyal CECO patrons. Whatever the need, if CECO can't solve it, who can?

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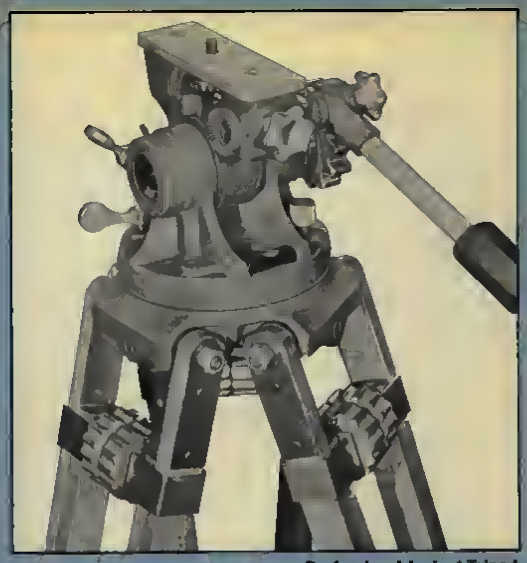

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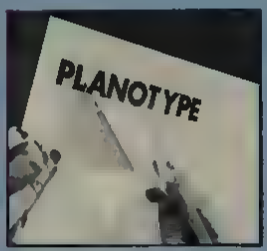

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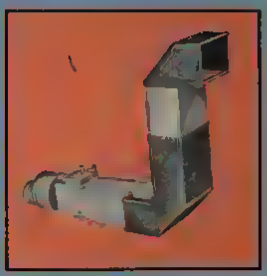

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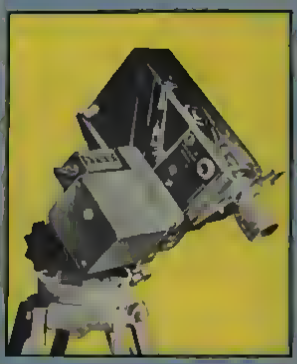

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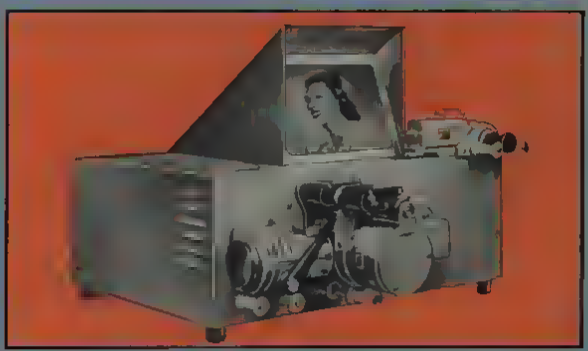

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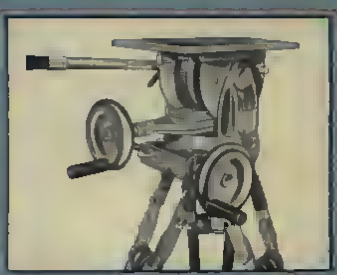

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TECHNICAL QUESTIONS & ANSWERS

Conducted by Walter Strenge, A.S.C.

QUESTIONS relating to cinematography or other phases of film production are invited from readers and will be answered by letter by Walter Strenge or by other qualified members of the American Society of Cinematographers. Questions and answers considered of general interest will appear in this column.—*Ed.*

Q 1) Can 16mm color film be satisfactorily blown up to 35mm for wide-screen exhibition? If so, what is the maximum size it can be projected? 2) If 16mm film can be enlarged to wide-screen proportions would you recommend closeups from 3 to 30 feet as more satisfactory than distant shots? ——*R. G., London, England.*

Answer: 1) Even when 16mm film was blown up for 35mm exhibition prior to the advent of present high aspect ratios it was never considered satisfactory from a sharpness point of view.

Generally, blowups of 16mm footage have been used where the photography, for one reason or another, could not be done with bulkier 35mm cameras; or if the 16mm footage comprised such novel or interesting subject matter that any lack of sharpness might be tolerated by theatre patrons.

I would not consider a 16mm color original to be satisfactorily sharp for really wide-screen projection where the magnification would be in the order of 1000 times, as for large outdoor drive-in theatre screens. I would consider a screen wider than 25 feet, regardless of the aspect ratio employed, would not yield a satisfactorily sharp picture from a 16mm blowup.

2) In general, where a 16mm film must be blown up for wide-screen presentation, the closer the action can be kept to the camera during filming the sharper the photography will appear on the screen. It is not likely that a shot in which action is 30 feet from the camera would be considered a closeup, however. — *Wilton Holm, A.S.C. Associate.*

Q In filming an interior set, I would like all the highlights which shine to assume starry shapes, and for closeups of a woman, the eye-lights to look like stars. How can this be achieved?—*M. A., Pakistan.*

Answer: Photograph the scene through a silk gauze.—*Ernest Haller, A.S.C.*

Q The next production I am to photograph for the U.S. Bureau of Mines calls for an exterior scene as follows: *L.S.: Car drives up road, stops in front of cabin. Two men get out and enter. The day is dismal—cloudy, rainy.* How can I shoot such a scene in 16mm color on a clear day, yet get the visual effect called for?—*S. R. S., Pittsburgh, Pa.*

Answer: Make a series of tests—first using a fog filter and an 83 filter together; then make a second test without the 83 filter; shoot a third test using no filter at all. For each test, decrease exposure on stop. — *Walter Strenge, A.S.C.*

Q When shooting special effects of the displacement type in stop-motion, such as is done by Willis O'Brien or Ray Harryhausen, how are the figures supported for the various positions, particularly when they are in the air, as during a jump? Does Harryhausen use a standard traveling matte process to obtain rock-steady, fringeless combination prints or some other process?—*J. D., Los Angeles, Calif.*

Answer: Figures jumping in the air are generally animated, frame by frame, through their successive positions, suspended by wires.

Composites of foreground and background action are generally accomplished by the background projection process. Also, this type of miniature animation is quite adaptable to the

Continued on Page 404

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QUESTIONS & ANSWERS

Continued from Preceding Page

making of fringeless traveling matte composites. An extra frame can be photographed each time silhouetting the foreground figure against a white light projected through a translucent background screen alternately with normal photography against a black background. From the negative thus obtained, a perfect traveling matte print can be made by skip-frame optical printing.—*Linwood Dunn, A.S.C.*

Q In motion picture and TV set lighting, what light source is called the "key light"?—*K. K. Nixon.*

Answer: The "key light" is the main source of light, such as light from the sun, moon, windows, open doorways, lamps, etc. It is usually the light that is used for direction and modelling.

The director of photography invariably key-lights his set first. In this procedure, he establishes the light pattern for the time of day or night and its mood.

Regardless of the fill lighting used for emotional effect, one should try to be consistent in carrying out the key or source lighting on sets, faces and objects. This will give the illusion of naturalness in the photography.—*James Wong Howe, A.S.C.*

Q Please advise the correct method for determining filter factor and correct exposure when using a combination of more than one filter.—*C. L., Honolulu, Hawaii.*

Answer: When using a combination of two filters you can either multiply the factors or calculate them separately, as shown below. For example a 5 factor filter and a 4 factor filter used together have a total factor of 20, viz:

Light	*Factor*	*Stop*	*Factor*	*Stop*
f/22			20	f/5
f/22	5	f/10	4	f/5

—*Walter Strenge, A.S.C.*

Q Are butt splices made with tape as durable as conventional lap-splices? —*W. L., Cincinnati, Ohio.*

Answer: Butt splices made with Mylar tape are said to be stronger than any other type of splice known. — *Ted Fogelman, A.S.C. Associate.* ■

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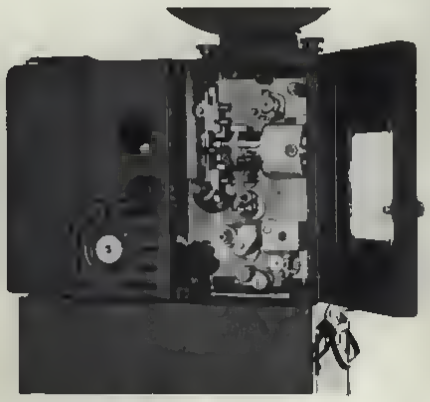

Interior showing Selsyn Motor and gloss heat filter.

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PROFESSIONAL JUNIOR*—product of experience

and friend to thousands of cameramen

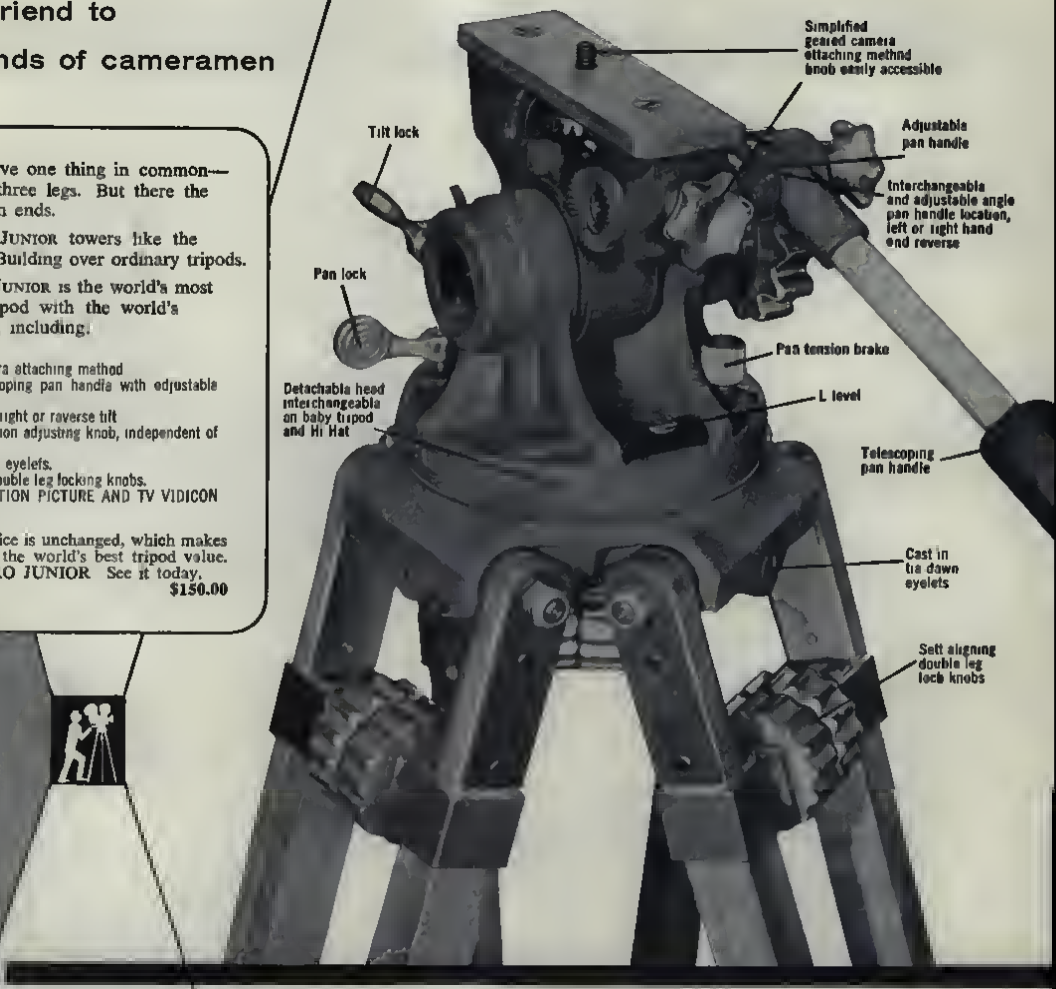
All tripods have one thing in common—they rest on three legs. But there the the comparison ends.

Because PRO JUNIOR towers like the Empire State Building over ordinary tripods.

Because PRO JUNIOR is the world's most *convenient* tripod with the world's finest features, including:

- Simplified camera attaching method
- Adjusting telescoping pan handle with adjustable angle.
- Sockets for left, right or reverse tilt
- Special pan tension adjusting knob, independent of pan lock
- Cast in tie-down eyelets.
- Self-adjusting double leg locking knobs.
- IDEAL FOR MOTION PICTURE AND TV VIDICON CAMERAS.

And still the price is unchanged, which makes PRO JUNIOR the world's best tripod value. Pros go for PRO JUNIOR See it today.
$150.00


Simplified geared camera attaching method knob easily accessible
Tilt lock
Adjustable pan handle
Interchangeable and adjustable angle pan handle location, left or right hand and reverse
Pan lock
Pan tension brake
Detachable head interchangeable on baby tripod and Hi Hat
L level
Telescoping pan handle
Cast in tie down eyelets
Self aligning double leg lock knobs

CECO Professional Jr. Hi-Hat

An adapter for extremely low-mount setups; also used for title stands and permanent mountings. Handles either friction or geared-drive tripod heads. **$22.00**

CECO Professional Jr. Adjustable Wooden Baby Tripod

Accepts all Pro Jr. Tripod Heads. Has substantial shoe and spur. Measures 26" extended from floor to flange, 18" collapsed. Weight 7 lbs. **$75.00**

PROFESSIONAL JR. Geared Head

Used on Professional Jr. standard tripod. Crank handles control pan and tilt action.
$175.00 Head only.
$225.00 Complete with tripod.

FRANN C. ZUCKER

CAMERA EQUIPMENT CO., INC.

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THE CHOICE OF PROFESSIONALS ALL OVER THE WORLD

12th IN A SERIES

"ARRIFLEX SERVES AMERICAN INDUSTRY"

ARRI

Avco's Research and Advanced Development Division selects Arriflex to record the progress of a data recovery program; another phase in carrying out Air Force contracts to produce re-entry vehicles for the intercontinental ballistics missiles Titan and Minuteman. The photographs show Arriflex cameras filming a test air-drop of an information capsule under development for use in ICBM re-entry vehicles.

Avco uses no less than six Arriflex motion picture cameras, both 16mm and 35mm. Some are in continuous, around-the-clock use, performing perfectly under the most exacting conditions imaginable.

Arriflex, the world's most ruggedly reliable, money-saving production camera can perform equally well for you!

Here Jack Philo, Avco cameraman, uses an Arriflex 16 during "data cassette program" on Cat Island, one mile off Marblehead, Mass. That's a 32 inch telephoto lens mounted on the Arri. Avco cameramen carry the rugged ARRIFLEX wherever they travel in conjunction with this new data recovery development program

Arriflex 35 and foul-weather gear sported by Jack Philo during one phase of "data cassette program", in which a capsule in a test drop is recovered off Marblehead on the windswept New England coast. During critical experiments Arriflex motion picture cameras are in use 24 hours a day.

Avco cameraman Mel Muraglotta checks out telescope and 600mm lens alignment on his dependable Arriflex before leaving for the drop test site off Marblehead. The experiments were recorded from Cat Island, a lobster boat, and a high-flying plane. The one thing all have in common...an Arriflex aboard.

The Arriflex is used in-plant too. Here it is shown photographing new instrumentation in an environment test program. Through these films, the Air Force can evaluate Avco's progress on contracts to produce re-entry vehicles for Titan & Minuteman ICBM's.

Discover the reasons why the motion picture departments of leading companies and professional producers prefer the remarkably versatile Arriflex 16mm and 35mm cameras. Write for complete literature today!

ARRIFLEX® a division of KLING PHOTO CORPORATION 257 Fourth Ave., New York 10, N. Y.

PHOTOGRAPHIC ASSIGNMENTS

WHAT THE INDUSTRY'S CAMERAMEN WERE SHOOTING LAST MONTH

ASTERISKS INDICATE TELEVISION FILMS

ALLIED ARTISTS

JOSEPH BIROC, ASC, "The Bat" (Liberty Pictures) with Vincent Price and Agnes Moorehead Crane Wilbur, director

AMCO STUDIOS

JACK MARQUETTE, "The Living Dead" (Amer. Int'l Pict's) with Dick Miller and Barboura Morris. Roger Corman, director

AMERICAN NATIONAL

CURT FETTERS "Bat Masterson"* (Ziv-TV) with Gene Barry

BOB HOFFMAN, RICHARD RAWLINGS, "Bold Venture"* (Ziv TV) with Dane Clark.

WILLIAM WHITLEY, ASC, "Space"* (Ziv-TV) with Bill Lundigan.

RICHARD RAWLINGS, BOB HOFFMAN, "Sea Hunt"* (Ziv TV) with Lloyd Bridges.

MONROE ASKINS, BOB HOFFMAN, "Lockup"* (Ziv TV) with MacDonald Carey

CALIFORNIA STUDIOS

ALAN STENSVOLD, ASC, "Police Station"*, "Congressional Investigator"* (Sandy Howard Prods.) Sandy Howard, director

FLEET SOUTHCOTT, 'Navy Industrial Film'* (Roland Reed Prods.) Arthur Pearson, director.

EMMETT BERGHOLZ, "Troubleshooters"* (Filmaster Prods.) with Keenan Wynn, Bob Mathias Robt. Altman, director.

CASCADE PICTURES

ROY SEAWRIGHT, Commercials*

ELWOOD BREDELL, ASC, Commercials*

COLUMBIA

GERT ANDERSON, ASC, "Donna Reed Show"* (Screen Gems) with Donna Reed. Oscar Rudolph, director

SAM LEAVITT, ASC, "Anatomy of a Murder" (C'Scope, Carlyle Prods., shooting in Michigan) with James Stewart and Lee Remick, Otto Preminger, director.

OSWALD MORRIS, "Our Man in Havana" (Kingmead Prods., C'Scope, shooting in Havana) with Alec Guinness and Maureen O'Hara. Carol Reed, director

GEORGES PERINAL, "Once More, with Feeling" (Stanley Donen Films, shooting in Paris) with Yul Brynner and Kay Kendall. Stanley Donen, director.

FRED JACKMAN, Jr., "The Flying Fontaines" (Color; Clover Prods.) with Michael Callan and Evy Norlund. George Sherman, director, Commercials* (Screen Gems)

JAMES WONG HOWE, ASC, "A Magic Flame" (C'Scope & Color, Goetz Picts.; shooting in Vienna) with Dick Bogarde and Capucine. Charles Vidor, director.

ALBERT BENITZ, 'Man On a String" (RD DR Corp; shooting in Berlin) with Ernest Bargnine and Kerwin Mathews. Andre de Toth, director.

WILFRID CLINE, ASC, "The Tingler" (Wm Castle* Assoc.) with Vincent Price and Judith Evelyn William Castle, Director

RAY CORY, ASC, "Have Rocket, Will Travel" (Romm Prods.) with three Stooges and Jerome Cowan. David Rich, director

JACK HILDYARD, "Suddenly, Last Summer" (Sam Spiegel Prods., shooting in London) with Elizabeth Taylor and Montgomery Clift Joseph Mankiewicz, director

HENRY FREULICH, ASC, "Dennis the Menace"* (Screen Gems with Gloria Henry & Herbert Anderson. Wm Russell, director Commercials* (Screen Gems).

IRVING LIPPMAN, Commercials* (Screen Gems).

JACK ETRA, "Stakeout"* (Screen Gems, shooting in Fla.) with Walter Mathau Harmon Jones, director

BURNETT GUFFEY, ASC, "Mountain Road" (WideScreen, shooting in Ariz.) with James Stewart. Tony Mann, director.

DISNEY STUDIOS

WILLIAM SNYDER, ASC, "Toby Tyler (Technicolor) with Kevin Corcoran and Henry Calvin. Charles Barton, director

PAUL BEESON, "Kidnapped" (Buena Vista release, Technicolor; shooting in England & Scotland) with James MacArthur and Peter Finch, Robert Stevenson, director

PHILIP LATHROP, "The Swamp Fox"* with Leslie Nielsen and Joy Page. Harry Keller, director

FOX WESTERN AVENUE

GEORGE DISKANT, ASC, "David Niven Show"* (Four Star Prods) with David Niven "The Rifleman"* (Four Star Prods.) with Chuck Connors.

JAMES VAN TREES, ASC, "The Many Loves of Dobie Gillis"* with Dwayne Hickman

GUY ROE, ASC, CHARLES BURKE, "Wanted Dead or Alive"* (Four Star Prods.) with Steve McQueen

J. PEVERELL MARLEY, ASC, Commercials* (Four Star Prods.)

GENERAL SERVICE

NEAL BECKNER, "The Adventures of Ozzie & Harriet"* (Stage 5 Prods.) with the Nelsons Ozzie Nelson, director

FRANK PHILLIPS, "Border Patrol"* (Gallu Prods.) with Richard Webb Richard Whorf, director

INDEPENDENT

FRANK PLANER, ASC, "The Unforgiven" (Panavision & Eastman color; Hecht-Hill-Lancaster for UA; shooting in Mexico) with Burt Lancaster and Audrey Hepburn John Huston, director.

JAMES SEELEY, ASC, Missile Test Project RCA Atlantic Missile Range, Cape Canaveral, Fla.

GEORGES STAHL, "Jet over the Atlantic" (Giantscope, Benedict Bogeaus Prod., Inter Continent release; shooting in Spain and Mexico) with Guy Madison and Virginia Mayo Byron Haskin, director.

JOE MACDONALD, ASC, "The Gallant Hours" (Cagney Montgomery Prods. for U.A release) with James Cagney and Dennis Weaver Robert Montgomery, director.

EMMANUEL ROJAS, "The Man" (Lynn Romero Prod. for Hal Roach Corp., shooting in Manila) with Francis Lederer and Greta Thyssen Gerald De Leon, director.

ADALBERTO ALBESTINI, "Colossus and the Golden Horde" (Dyaliscope* Color, Amer. Int'l Standard co prod.; shooting in Rome & Yugoslavia) with Steve Reeves and Chelp Alonso. Carla Campogalliani, director.

KENNETH PEACH, ASC, "Outcasts" (Premium Pictures) with Bill Williams and Marcia Henderson. Edw. L. Cahn, director.

GILBERT WARRENTON, ASC, "Ghost of the Drag Strip Hollow" (Amer. Int'l Picts.) with Judy Fair and Martin Braddock. William Hole, director

LEONARD CLAIRMONT, "Stump Run" (Emerald Prods.; shooting in Ore.) with Edgar Buchanan and Slim Pickens. Edward Dew, director.

FLOYD CROSBY, ASC, "Ordeal at Dry Red" (Meridian Prod., shooting in Kansas City) with Peter Mamakos and House Peters, Jr Richard Sarafian, director.

SOL ROIZMAN, Industrial for Western Electric Co* (Audio Prods., shooting in N Y) Bill Jersey, director

MORRIS HARTZBAND "Brenner"* (Kenco, shooting in N Y) with Ed Binns and James Broderick Gerald Mayer and Herman Hoffman, directors

KEYWEST STUDIOS

WALTER STRENGE, ASC, Series of religious pictures (Family Films)- Eddie Dew and William Claxton, directors

LINKLETTER PLAYHOUSE

ALAN STENSVOLD, ASC, People Are Funny"* Herb Atkins, director.

METRO-GOLDWYN-MAYER

LESTER SHOMA, ASC, 'Col. Humphrey J. Flack"* (Jady Pan Prods.) with Alan Mowbray and Frank Janks.

JOHN NICHOLAUS, "Rawhide"* (CBS TV) with Eric Fleming and Clint Eastwood.

WILLIAM MARGULIES, "The Lawless Years"* (Jack Chertok Prods.) with James Gregory and Robert Karnes

JOSEPH RUTTENBERG, ASC, "The Wreck of the Mary Deare" (C'Scope & Color) with Gary Cooper and Charlton Heston, Michael Anderson, director

MILTON KRASNER, ASC, "Home from the Hill" (C'Scope & Color) with Robert Mitchum and Eleanor Parker. Vincente Minelli, director.

WILLIAM DANIELS, ASC, "Never so Few" (C'Scope & Color) with Frank Sinatra and Gina Lollobrigida. John Sturges, director

HAL MOHR, ASC, "The Last Voyage" (Color, shooting in Japan) with Robert Stack and Dorothy Malone. Andrew L. Stone, director

PAUL VOGEL, ASC, "The Time Machine" (Galaxy Prods.) with Rod Taylor and Alan Young. George Pal, director.

Continued on Page 445

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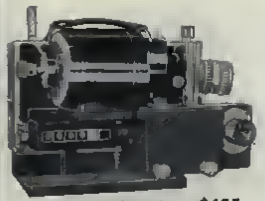
Unconditionally Guaranteed for Top Satisfactory Performance



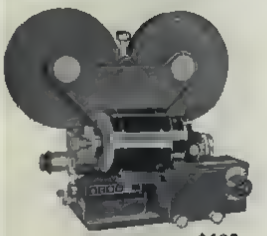
For Cine Special I and II, **$455**

ANIMATION MOTORS

for Cine Special • Mourer Arriflex • Mitchell

Synchronous motor unit, 115V, single phase, 50/60 cycle. Available in 60 or 100 frames per minute units.

Time Lapse Equipment available



For Maurer Camera, **$485**

Variable Speed Motors with Tachometer

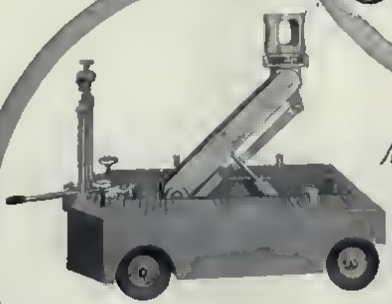
for Cine Special and Maurer Cameras

COLLAPSIBLE 3-WHEEL DOLLY

For motion picture and TV cameras. Sturdy cast aluminum. For standard or baby tripods. Additional baby tripod point holders to control spread of tripod legs. Adjustable spring seat. Extra wide rubber wheels. Bronze tie down clamps and other features.

For studio or location. Folds into one compact unit. Can be used with professional or semi-professional tripods

$325



Nothing Like It!

The Versatile CRAB HYDROLLY

Features many new advantages found in no other dolly. Maneuverable to ALL angles with instant ease. Variable up and down control. Dual wheel steering for crab and conventional back steering.

Noiseless operation. Its versatility permits unusual dramatic shots and reduces costly set-up time.

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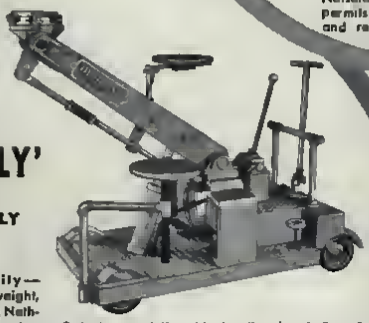
Our Exclusive Distributor

Neumade

Any combination of 16mm and/or 35mm sprockets assembled to specification.

Cast aluminum. Foot linear type, adjustable frame dial. Fast finger roller release. Contact rollers adjusted individually for positive film contact. Sprocket shaft slip lock, footage counter, etc.



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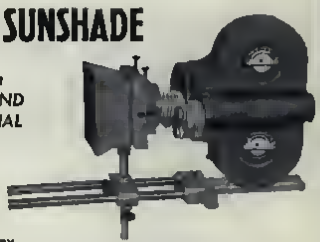
TV OR CAMERA DOLLY

Instant moveability—streamlined, lightweight, exceptionally sturdy. Nothing to get out of order. Many new advantages for easy operation. Hydraulic lift type for fast upward and downward motion.

Swivel seat. Adjustable leveling head. Seat for assistant. In-line wheels for track use. Steering wheel, rigid floor locks. Hand pump or combination hand and motor pump. Easily transportable.

MATTE BOX & SUNSHADE

FITS ALL 16mm PROFESSIONAL AND SEMI-PROFESSIONAL CAMERAS



The latest in matte boxes, embodying many new advantages! Takes all accessories such as gauze holders, diffusion filters, effect filters, etc. For use with 2" and 3" square glass or gelatin filters. Fibre filter holders supplied. Beautifully constructed of durable aluminum castings with dural front rods. Optical black interior.

Base fits all cameras and has large and small tripod threads.

Takes all lenses 15mm to 152mm.

Rubber back caps avoid back flare, when lens is smaller than back opening

ONLY $44.95

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DESIGNING & MANUFACTURING of Lens Mount and Camera Equipment for 16mm 35mm TV Cameras

BAUSCH & LOMB BALTAR LENSES and OTHERS for motion picture TV cameras 15mm to 40" focal length

COMPLETE LINE 16mm, 35mm cameras, dollies, synchronizers, animation equipment, cutting room and time lapse equipment

BELL & HOWELL: Standard, Hi Speed BNC NC, 16mm

MITCHELL: Standard, Hi Speed BNC NC, 16mm ARRIFLEX 16 & 35mm

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NATIONAL CINE EQUIPMENT, Inc

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A TWICE-IN-A-LIFETIME EVENT

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Many come from our rental inventory, leading studios, labs, producers or from U S Gov't excess stocks. Unless otherwise indicated, everything is new or in good operating condition, ready for instant use, guaranteed exactly as represented. Hundreds of other specials not advertised. Write, Wire, or Phone Your Needs.

• CAMERAS 35MM

Mitchell single lens mounl; 115V Sync motor (16 fps); camera Reconditioned $747 50
B&H 2709 with dissolve, pilot pin movement ..... $3500 00 value $1795 00
Same with prismatic shuttle $2295 00
Wall single system with 3 lenses; viewfinder; motors; 4 400 magazines; cases $7000 00 value Less sound Good condition $1195 00
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Arriflex I, 3 fast lenses; 200' magazine, matteabox, can shade $1700 00 value $575 00
Wall Movietone Camera; 4 lenses; 2 magazines, 12 Vall motor; Mitchell type viewfinder Closeout $995 00
Cameraflex (Cineflex), 3 lenses, Apogor 35mm, 50mm and 75mm Bolters All f2 3 24V meter; 2-200' magazines Excellent condition $495 00

• CAMERAS 16MM

Mitchell 16, w/3 Bolters; 400' magazine; 220V 2 ph cyncmotor; large finder $6,000 value $3995 00
Anricon Pre-200 w/parallax finder; matteabox; sunshade; case Less sound Good condition $495 00
Menrer modified 05, cyncmotor; 400' magazine, 4 lenc turret A new low $1495 00
Mertan Sonndmaster, 200' and 400' mags; zoom view finder; 3 fast lenses; recording amplifier; power supply; sheath barney blimp; case. $2000 00 value $895 00
200' Cine Special I, with 200' magazine, 4 lenc turret, focusing eyepiece, rackover, 4 lenses—15/25/35/100mm—$1000 00 value $444 00
B&H Filmo 70DA turret w/3 lenses; drum finder; ob jectives; 1mnh $239 50
B&H 70H w/400' magazine, 3T stopped fast lenses, wide angle 1" and telephotos; 110V syncmotor, accesso ries and case $1250 value. Only $595 00

• CAMERA ACCESSORIES

Arriflex 35mm 200' magazines, converted Cineflex type New $54 50
Cine Special 100' chambers for single perforation Good condition $125 00
Cineflex 35mm 200' magazines (Convertible to Arriflex) Good condition $19 50
Tripod Trianglar, present clipping $30 00 value New, Only $17 95
Tripod Trianglar, used $13 50
Collapsible Tripod Triangles with lindawn clamps New $29 50
Dolly Track with connectors, 5' 10' 15' lengths, per foot new $4 95
with self leveling screws, per foot new $5 95
Photo Research Spectra 3 color meter with computer $350 00 value Good condition $195 00
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New Tewe 35mm Matiefinders; zoom from wide angle to telephoto $77 00 value $49 50
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Kodachrome Haze Filters, size 5 for Filmo $2 95 value ..... $ 75
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Harrison K2 Glass Filters, 4" square $9 00 value $ 98
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New Mitchell type heavy duty Tripods; ¾ or ctd (takes Mitchell, Houston Fearless or Ceco TV Freeheads) Only $119 50
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Brand new Jr. type Tripods; regular $145 00 Reduced to $119 50
H F heavy duty Commercial Certop Platforms Holds 800 lbs. Has 4'x5' oen ckld top and removable ladder $220 00 value $149 50

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Cine Special, 12V variable with tachometer, $350 00 value Good condition $195 00
Cine Special 110V AC synchronous. $150 00 value Good condition $99 50
Mitchell NC 24V w/tachometer $525 00 value, $325 00
Mitchell 110V AC/DC Wild Motor with tachometer $525 00 value Good condition $349 50
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Cineflex (Cameraflex), DC 12V & 34V New, shelf worn Only $57 50
Fearless 110V DC Interlock for Mitchell STD $195 00
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Wectrex Mitchell 220V 3ph Interlock 1200 rpm $249 50
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Heavy duty Wellope and Phase Adjncter, Input 180V to 240V, output 220V, 3 ph. Cabinet mounting of 3 powerstats Total capacity 22 5 amps $300 00 value Only $125 00

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S O S Professional Titler and Special Effects Kit—New TG II $175 00
TG III $225 00
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Fomenc Tel Animo-Scale Standard of Animation Indnc try Regularly $2 50 New $1 25
Acme 16mm Animation Camera; reflex viewer; auto matic dissolve and take-up 400' magazine ver tical counter; stop motion motor; 32mm lens $4500 00 value $3495 00
B&H 35mm Animation Camera; 400' mag; dissolve $3500 00 value $1795 00
Same with 1hrn lens-leacning $2250 00
Hot Press with 4" typeholder; 3 way switch $400 00 value, like new $295 00
Tel-Animarland, sliding sideboard with pantograph ex tension; shadowbox; platen $4000 00 value $2495.00

• LIGHTING EQUIPMENT

Senior Fivelite Kit, 2 heads; stand; new Colortran Senior Converter $275 00 value $159 50
Double Broads w/clamps, 1000W lamps $125 00 value Only $59 50
Extension & Power Cords 25' w/half plug or box $22 50
5KW Kling and MB Senior Spots on clamps, excellent condition $179 50
B&M or MB 2000W Spotz on stands Excellent $99 95
Berdwell McAlister 750W Baby Kngc with clamps A good buy $57 50
Northlite; 2000W Cone less stand $110 value, $79 50
Mole Richardson 120 Amp Molorc (Type 90) on pedestal with grid and cables $1278 00 value Excellent condition $895 00
MR Twin Arc Broad on heavy stand with ballast, 35/40 amps $500 00 value Good condition $49 50
GE Lamps; all new; 1000W T20 C13 Mogul Screw. Regularly $7 90 ..... $2 95
1000W G48 C13 Mog Bipost Regularly $15 25 $6 95
2100W T24 Mogul Bipost 60V Regularly $22.50 $7 95
Portable 220/110V power unit, 3000 watts with Variac Voll meter, twin circuit breakers, 6 double pingang boxes and 4 standard outlets Originally $950, $195 00
Frezzolite portable unit with Soft nickel/cadmium bar teries $395 00 Good used condition $275 00
Slightly used Hi Power Bnibc for various lights at discounts up to 50% State your needs

• RECORDING EQUIPMENT

Magnetic Playback Unit for 35mm film phonographs with preamplifier, transformer. New $495 00
Reaves, 35mm Optical Recorder, with lentage cannis tachometer glow lamp; amplifier; mixer Original $3000 00 Needs repairs $195 00
Westrex 35mm Optical Recorders, outright purchase good condition $3500 00
Reconditioned $4995 00
Westrex 35mm Dubbers, 220V 3ph interlock motors $1500 00 value $895 00
Wectrex Dice Latne Recorders, originally $4500, $995 00
MS Mike Boom & Foremanlator, late type $2100 00 veine $1395 00
MS Mike Boom and 2 wheel tricycle type Perambulator Only $695 00
BCA Photophone 35mm Optical Recording Heads; 1000' magazine lens; meter No license required $2995 00
BCA Photophone 35mm Fantaconal film phonograph w Soisyn motors Originally $6,500 00 ..... $1495 00
Stephens Wireless Mike outfit 2 Microphones, power supply, transmitter; antenna; receiver, $2000 00 value $595 00
New Amnex 35mm Magnetic Reproducers w/filtcrs filmflow Make wonderful re-recorders or playbacks $600 00 value $249 50
Dewry 25mm Soundhenic w/phnle cell sound drum ¾"x3" optical system with dampening device, ex citer lamp and gears; Good for film phones or sound readers Worth $200 00 ..... $19 95
Dewry 35mm Soundheadc less optical system $9 95

• PROJECTORS, Background Screening and Preview

Sedient 11'x14' Portable Folapah Screenc with collapsible frame in trunk Originally $150 00 Government surplus $44 50
Simalex SP 35mm Projectors; 2000' magazines; 1000W lamp; lenc, amplifier; speaker Excellent $595 00
Same, additional Projector $400 00
New Anamorphic 35mm lenses, fixed or variable; $30 value $195 00
Projection Lenses, 35mm Series I or II, from $10 00
BCA Brenkert Enerc or Ashcroft D HI intensity Arclamp 45/70 amp like new $750 00 value $225 00
Fearless Magnarcs, good condition $195 00
New BCA 15" PM heavy duty Speakers, list $164 00 less than ½ price $79 50
Holmes 16mm Arc Projector lenc, amplifier, Bell Strong arclamp; 15 amp rectifier pedestal $1000 00 veine $395 00
Theatre Chairs for screening roomc, used and rebuilt (send for Chair List) from $3 50
Filmcraft 35mm Movie Sound Process Onifil. Write for details $15 000 value $3950 00
Weber Syncro Dynamic 35mm theatre type Sound Projector Heavy pedestal 3000' magazines; built in high fidelity Soundhead Less lenc and lamphouse Originally $1,500 New $395 00
Simplex Acme 35mm Sound Projector, complete with amplifier and speaker Excellent condition $495 00
(For 2nd Acme Projector, add $500)
Holmes 35mm Sennd Projectors With 2000' magazines lenc built in sonndhend; 1000W lamphouse $195 00
35mm Interlock Simplex Projector with RCA sennd head 2000' nppcr magazine; 1500W lamp; lenc, heavy pedestal; amplifier, two way speaker For screening previewing corporate track and picture, also for recording $3,500 value Excellent condition $1995 00
Ampro Arc 16mm Sound Projector with Hi intensity arc lamp; lenc pedestal, 30A rectifier; 55W amplifier and 2 speakers Excellent condition $849 50
GPL PA 100A 16mm TV Sennd Projector with syncmotor lenc; pre-amp; all on one pedestal Capacity for 110 minutes running (3600' reel) $2500 value Slightly used $1395 00
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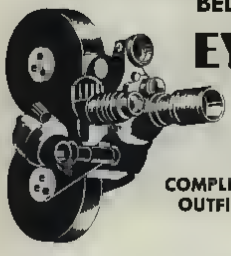

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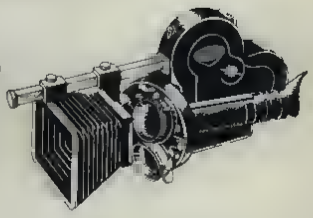

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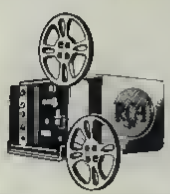

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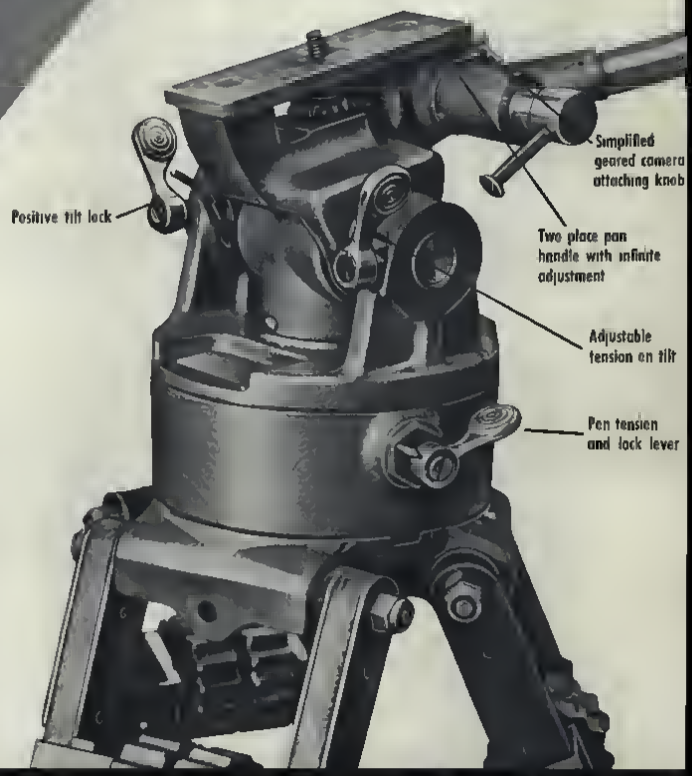
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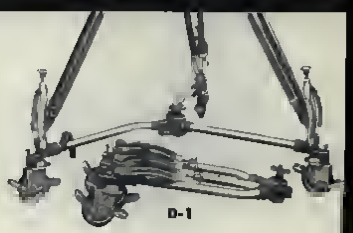

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BOOKLETS CATALOGS and BROCHURES

Camera Selector

A new, 4-page folder issued by Traid Corp., Encino, Calif., illustrates and describes 27 different motion picture and sequence data cameras which the company makes available on lease or outright sale. Titled *Camera Selector*, handy folder includes such information as frame speed, film capacity, overall dimensions, power requirements, special features, price and rental rate for each camera in addition to illustrating it. For free copy, address request on your letterhead to Carlos Elmer, Traid Corp., 17136 Ventura Blvd., Encino, Calif.

Film Lab Directory

A 60-page booklet listing the principal film laboratories throughout the world has been compiled by The Assoc. of Cinema Laboratories, Inc., 1226 Wisconsin Ave., N. W., Washington 7, D.C., U.S.A. Each listing gives firm name, address, and describes the laboratory services offered. Single copy price is $1.00.

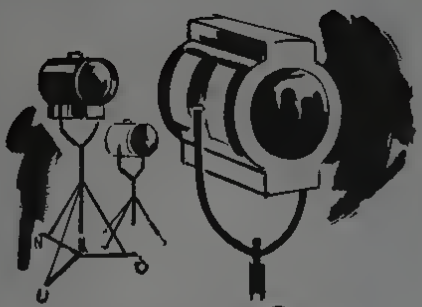
Rental Price List

Gordon Enterprises, 5362 No. Cahuenga Blvd., No. Hollywood, Calif., has recently issued a 16-page booklet listing all the cameras, lenses, and other motion picture equipment which they make available on a rental basis and giving the daily and weekly rental rates. Copies are free on request to the company.

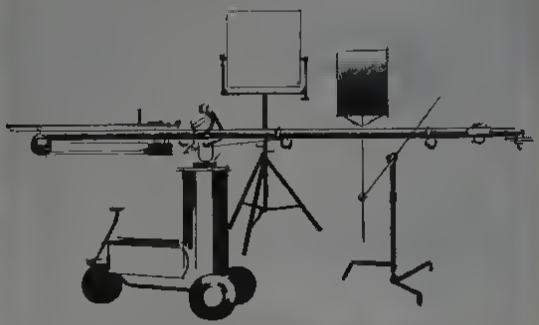
Magnetic Recording Equipment

Magnasync Manufacturing Co., Ltd., 5546 Satsuma Ave., No. Hollywood, Calif., offers a comprehensive 8½" x 11" illustrated loose-leaf catalog of magnetic film recording and reproducing devices. In addition to telling the reader how to select a recorder the pages describe the various Magnasync units including detailed specifications. Request for free copy should be made on your company letterhead.

Correction: In the *Books* column of our June issue, price of Cameron's Encyclopedia on Sound Motion Pictures was erroneously quoted as $10.00. The correct price is $15.00 per copy.—ED.



LIGHTS



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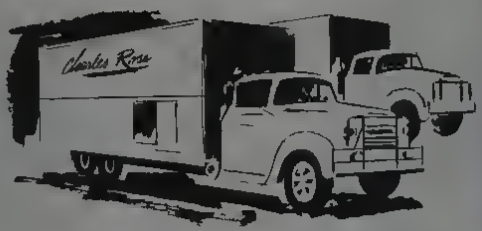

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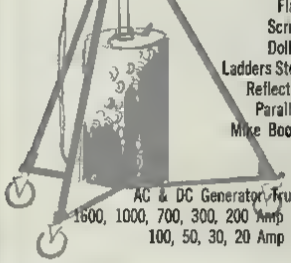

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FILMING "ANATOMY OF A

CINEMATOGRAPHER SAM LEAVITT, with finder, lines up a shot for "Anatomy Of A Murder" with director Otto Preminger (white shirt). Location interior is 57-year-old Marquette County (Michigan) courthouse.

By SAM LEAVITT, A.S.C.

A PASSION FOR AUTHENTICITY and realism, two highly desirable qualities in motion pictures, brought producer-director Otto Preminger and his production crew to Upper Michigan to shoot "Anatomy of a Murder," a story long at the top of "best seller" lists.

When I first heard of the plan in Hollywood, it seemed exciting and laudable. For nothing enhances the realism of a motion picture so much as staging and photographing its action away from Hollywood on actual locales.

We would be shooting, I was told, in the 57-year-old Marquette County court house—a stately and attractive building—and also in the actual home of the author of the novel, Michigan Supreme Court Justice John D. Voelker, as well as in and around other sites in the locality.

The court room, we discovered, when we made our initial visit of inspection, had been built by men who took great

UNUSUAL CAMERA SHOT was executed with boom-mounted camera. Boom swung full 180° during take from Jimmy Stewart to Judge on bench, thence to jury box at extreme right.

CAMERA SET-UP for two-shot of men seated at counsel's table. Here may be seen the restricted area in which cinematographer Leavitt and his crew had to work in Marquette County court room.

MURDER" IN THE STORY'S ACTUAL LOCALE

Limited working space and restricted lighting accommodations made the location shooting for this production a real photographic challenge.

pride in their work, determined that it would not fall apart at the seams. The walls were thick and solid—not one of them "wild"—and there was considerable dark woodwork, and above, a magnificent stained-glass dome.

Pictorially, all this was wonderful. But to hang lights here in the standard overhead set-lighting fashion was obviously out of the question. Moreover, we would not be allowed to nail anything to the smooth plaster walls. Obviously, we had a major lighting problem on our hands.

Mr. Preminger places great emphasis on the dramatic possibilities of the "fluid" camera, and in this production —and especially for the sequences that were to be shot in the court room—it was to be utilized to the utmost, constantly moving in and upon his players, retreating, lateralling, reversing its field, and covering some action in a full 180-degree swing of the boom. This photographic pattern plus the fact the court room was only 40 x 50 feet in extent, made the placement of lights, dimmer banks, camera crane and other equipment something of a problem.

Directly complicating the moving camera problem in the court room was the fact that much of the limited room area was taken up by the judge's bench, the jury box, the two attorney's tables, and the spectator's area which occupied a major portion of it. For one shot here we made fifteen separate camera moves —a tribute to the ingenuity of my wonderfully inventive camera crew.

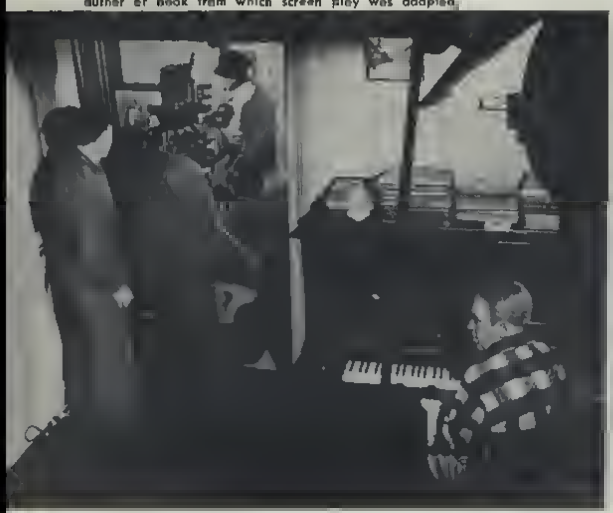
A major problem, of course, in filming these scenes, which involved six principals and some 200 extras, was getting the right balance in the lighting. Good lighting results were obtained when shooting close and medium shots here by placing lights in the court room balcony. But for long shots, taking in almost the entire court room, the physical limitations of the room prevented the use of cross lights.

When the company moved to Judge Voelker's home to film the scenes scheduled there, we found conditions quite cozy. The largest room in this 80-year-old residence was a scant 10 x 12 feet. Into this room we somehow managed to get James Stewart, Arthur O'Connell, Eve Arden, a piano, the camera, lights, and what crew members did not mind standing on one another's toes. Mr. Preminger, as I recall, directed the scene from the doorway of an adjoining room.

Probably the most ingenious shot we made on this location was a moving car shot without benefit of a conventional camera car. And because we had brought no vehicle along for making shots of this kind in the streets (the scene was written into the script on location) we looked about for a suit-

Continued on Page 443

TYPICAL OF tight quarters often encountered in shooting scenes in location interiors is this room in home of Justice John D. Voelker, author of book from which screen play was adapted.



CAMERA AND LIGHTS were mounted on "low-bed" truck to make a sequence of close shots of men moving through streets in an automobile. Sam Leavitt, wearing hat, is at left of camera.

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say about it...that counts

By BRUCE PALMER
News Director, KWTV
Oklahoma City, Okla.

THE ULTIMATE

Here is one cameraman's solution to the problem of equipment

TIRED OF LUGGING around a tripod, plus heavy battery and amplifier pack with his Auricon news camera, Bill Horton made a saddle to balance camera on his shoulders, sound equipment on his chest and batteries on his back.

FOR THE TELEVISION news cameraman working alone in the field, bulky camera and sound recording gear is a perplexing problem. It is a problem which many TV newsmen have been devoting a great deal of time and effort to improve. One of the most practical developments to come out of these efforts to date is the ingenious modification of the popular Auricon Cine-Voice single-system sound camera known as the Horton Portacon.

In 1955, W. A. "Bill" Horton, a slightly-built 135-pound free-lance cameraman of Oklahoma City, was employed by local station KWTV as news cameraman. The burden of the sound-film unit he had to work with was greater than need be, he thought, especially for one of his stature and muscular capabilities. So, he devoted his spare time to correcting this problem. This involved two things: reducing the overall weight of the aggregate equipment required for shooting news film with sound, and simplifying the method of carrying the equipment and eliminating the need for using a tripod.

Horton solved the carrying problem by designing a shoulder pod or saddle of quarter-inch strap aluminum 3" wide. This was shaped to accommodate curvature of the cameraman's chest, shoulder and upper portion of the back. This roughly U-shaped carrier, which is a basic feature of the patented* Portacon development, is padded on the under side with foam rubber 1-inch thick and covered with a sheath of heavy nylon fabric.

To mount his Cine-Voice, Horton then riveted on a flat, aluminum-strap platform that extended forward from the shoulder section of the pod. Varying positions for the camera were made possible by a series of screw-mount holes in the platform. The present version of the camera mount, however, is a pair of rigid, ⅜-inch parallel rods on which the camera can be moved for-

*U. S. Patent Office No. 2873645.

FRONT VIEW, showing transistorized amplifier mounte[d] below camera. Circular unit below is retractable mik[e] cord housing and microphone.

IN TV NEWS CAMERA PORTABILITY

answer to the problem of lightening the load necessary to shooting news film with sound for television

ward and back to suit the operator's position needs.

Having created his camera carrier, Horton turned to a second key part of his rig, the amplifier. It was here that one of the most serious difficulties in the normal employment of the Cine-Voice camera for news work lay. The bulk and great weight of the amplifier required the cameraman to carry it separately.

In his first experiment, Horton simply hung a small aluminum strap crate on the end of the chest extension of the shoulder saddle to hold the amplifier. This did nothing to relieve the problem of bulk, but it did lift the amplifier out of its original case and make it part of the portable package. Sound track exposure and VU meters were squarely in front of the cameraman, with all controls easily accessible. But this was not to be the final answer.

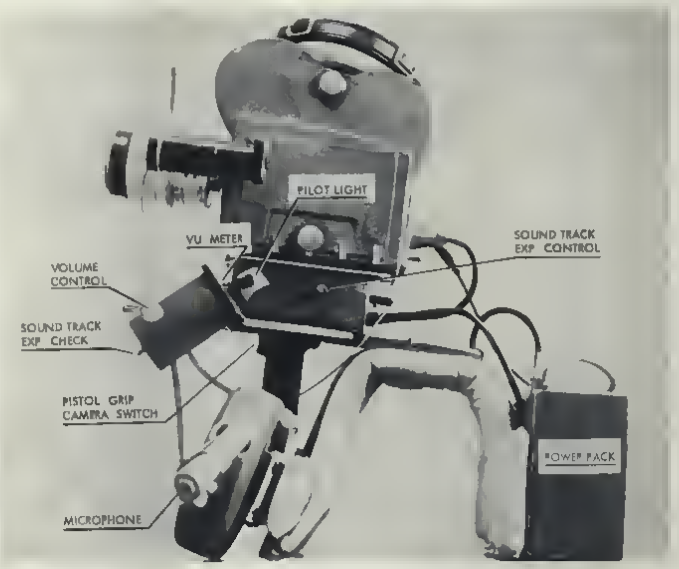
The third major problem was providing power for the portable rig. Horton could have modified his camera to replace the conventional 110-volt motor with a 12-volt unit. However, that would have limited its use on occasions when use of available 110-volt power would have been advantageous or necessary. Hence, he decided to stay with the original 110-volt Cine-Voice motor.

Another strap aluminum crate was attached to the back drop of the shoulder saddle to accommodate a 4" x 6" x 8" hard-rubber developing tank. The tank provided a container for a group of small wet batteries from a standard Frezzo-lite power pack that delivered 12 to 15 volts. Then he introduced into the power circuit a small power converter capable of boosting 12 volts to 110 and converting the direct current to alternating.

This was the original and rather crude beginning of the Portacon. All essential elements had been assembled into a more or less compact combination. At this point no modifications in

Continued on Page 438

REAR VIEW, showing power pack which hangs over shoulder of cameraman. Audio controls are forward in full view of operator



SIDE VIEW, showing various key components of the Horton Portacon conversion of the Auricon Cine-Voice camera used in TV news work. The Portacon is so balanced that cameraman can carry it on his shoulder, leaving both hands free to handle mike, lens, etc.

"SPIRIT OF ST LOUIS" (Warner Bros) was notable for examples of directional continuity, especially in the flying sequences, which always depicted Lindbergh's plane flying from left to right in its flight from the United States to France.

EXIT RIGHT, ENTER LEFT

. . the importance of directional continuity

By JOSEPH V. MASCELLI

DIRECTIONAL CONTINUITY—keeping the direction of movement of players, etc., consistent from scene to scene—can be one of the most vexing problems in motion picture production. Simply expressed, directional continuity means that when a player is photographed exiting right in one scene, he must be photographed entering and moving in the ensuing scene from the proper direction as established in the script.

A cameraman working alone and shooting off-the-cuff can often get into serious trouble direction-wise if he doesn't pay strict attention to this very important rule of motion picture production. Even veteran screen directors, working from a detailed shooting script, will err occasionally and for this reason most of them rely on the cameraman to keep them straight on directional continuity and to make certain that actors or vehicles enter and exist properly in a scene.

Directional continuity can be mas-

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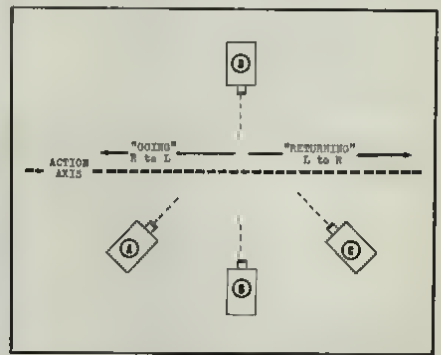
FIDELITY of directional continuity is vital to action pictures such as westerns. Here, cowhands return to ranch with body of fallen comrade lashed to third horse



CAMERAS A, B, and C are correctly placed with relation to action axis to photograph scene at left. Were scene shot with camera at D, screen action would be reversed.

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REHEARSING A SCENE FOR *Flight*. Twenty-three-year-old cameraman-director Michael Neyman perches beside Mitchell camera mounted on home-made boom to shoot scenes for picture on sea coast of Northern California. Note reflector used for fill light, also mike boom at left with metal scoop enclosing the mike as protection against wind.—*All photos by Clifford V. Harrington*

GENIUS WITH A CAMERA

Many an aspiring amateur moviemaker has dreamed of doing just what Michael Neyman did — tackle a full-scale 35mm feature film, using all professional equipment.

By CLIFFORD V. HARRINGTON

PHOTOGRAPHING A FEATURE MOTION PICTURE is work enough for most cameramen, but when there is added to the job such tasks as film direction, scenario writing and wild animal handling, the position requires a person with a variety of special talents—a genius.

Such a man is Michael Neyman, a 23-year old San Franciscan, who has undertaken the independent production of John Steinbeck's short-story, "Flight." Neyman not only wrote the script, but also is directing and photographing the 90-minute 35mm black-and-white picture. He also is the only person in the crew who cares to handle the three rattlesnakes which play a prominent part in the film.

The actual shooting of the picture culminates four years of preparation by young Neyman. He became interested in the story when he read it for a high school English class. At the time he noted in his report that "Flight" might make an interesting picture.

Later, following the motion picture experience he gained working for the Oakland (California) Museum on wildlife

films, and for a San Francisco talent agency which supplied extras for TV and theatrical film companies on location, he wrote a script from the story to determine if he were capable of such a project.

His work came to the attention on Barnaby Conrad, ex-bull fighter turned novelist and screen writer. Conrad liked the script and saw a possible production in it. John Steinbeck concurred and the movie rights were obtained. Conrad eventually became producer of the picture and principal stockholder in Flight Production, Inc.

The film which is being shot almost entirely on location, tells the story of a Mexican youth who inadvertently kills a man in Monterey and flees through the rugged Big Sur country on the California coast to avoid capture. The action takes place shortly after 1900.

Because of the moody atmosphere which pervades the story, the filming has presented photographic pitfalls which would test the skill of a seasoned professional. Portions of the story take place in a variety of locations—the cloudy, windswept coast, the misty redwood forests and the sun-baked crags of California's Pinnacles National Monument.

Although he has little formal schooling in the subject, Neyman possesses an amazing grasp of the techniques of cinematography. His interest began several years ago when he tried to cut a 16mm film he had made on a Mexican scientific jaunt for presentation on TV. He found his footage lacking in many respects and he determined then to learn all that he could about cinematography in order to improve his future films.

First he nearly exhausted the catalogues of several libraries on subjects even remotely connected with movie making. As he worked with professional film crews in San Francisco, he hovered around the cameramen, asking interminable questions. As a result, he absorbed considerable knowledge of professional motion picture techniques.

To insure the photographic quality of his present production, Neyman shot test footage and made stills of most of the locations and effects which he planned to incorporate in the film. In addition, his script was prepared in TV fashion, with each camera set-up and movement carefully planned.

NEYMAN (left) runs edited footage through film viewer as Efrain Ramirez, star of picture, looks on.

WHILE ASSISTANT focuses the Mitchell camera for a closeup, Neyman places live rattlesnake in position before lens for the desired shot. Temperamental antics of snake caused many retakes before a satisfactory shot was obtained.

It was Neyman's imaginative photography in an early pilot film which convinced Steinbeck that his story property could be entrusted to a comparative newcomer for filming.

Neyman spent many days in mental preparation for the photography of "Flight." Because the youth in the story was to be pictured alone in most of the scenes, he realized that nature itself would also take on the importance of a main character. Thus, his photographic interpretation of the terrain would be a major factor in the film's effectiveness.

He talked to many pioneer residents of the region south of Monterey in an effort to capture some of their recollections of the gloomy area. From their stories he developed a picture of how the land appeared to them at the turn of the century.

From the bleak descriptions, Neyman conceived a somber, yet forceful adaptation of the story. Thus, filters have played an important part in translating his impressions to the screen.

Even the Santa Lucia mountains come in for special camera treatment. A man with whom Neyman had talked, pointed out that the coastal range, comparatively young in the eons of time, was thrust violently from the sea.

This discussion reminded Neyman of a visual illusion which he had stumbled across in his pre-production test filming. He found that if he held his camera on the base of a mountain for several seconds and then tilted up, he could lap-dissolve into a static shot of another peak and give viewers the impression that the second summit was moving vertically. Thus, a rising effect could he given to the inanimate terrain. His purpose throughout the filming has been

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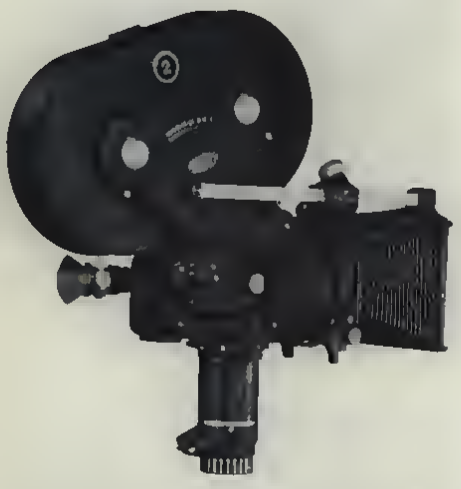
THE ARRIFLEX 35



ARRIFLEX 35 MODEL IIB camera with 400 ft magazine and adjustable matte box. At left, below magazine, is eye-piece of reflex viewer

It's a hand camera or a studio camera, is portable, flexible and highly versatile and, like its 16mm counterpart, it features reflex viewing while shooting.

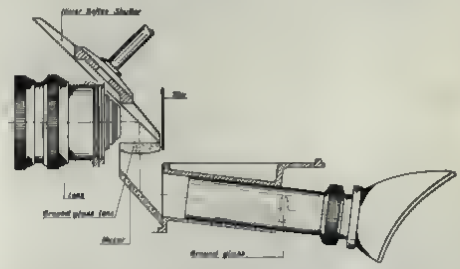
LIKE ITS 16MM COUNTERPART described here last month, the 35mm Arriflex is a versatile and rugged professional motion picture camera adaptable to a wide range of production uses, from hand-held newsreel shooting to sound stage film production. Its salient features are its mirror reflex shutter, rotary 3-lens turret, and electric motor drive.

Since the advent of the Arriflex 35 about 20 years ago, there have been three models, or rather three revisions or improvements of the original model—each successive one incorporating new and improved features. Model II (1938 to 1945) featured a 120° shutter, circular claw movement, and matte box mounted on a square shaft. A later issue of Model II (1950 to 1953) incorporated stainless steel film gate, and round matte box shaft. The film movement and shutter design remained unchanged.

Model IIA (1954 to 1957) featured a 180° shutter, new, brighter and sharper optical system, new internal mechanism, cardoid film movement, built-in pulse switch and removable "nose" that permitted camera to be used in a blimp.

The latest model—Model IIB—retains all the salient features of the IIA and in addition has a new and stronger hand-grip electric motor capable of moving the larger film load of 400-foot magazines, which are interchangeable with the 200-foot chambers.

VIEW OF THE MODEL IIB from opposite side. Extending from bottom of camera is its 16-volt 'wild' motor which also serves as hand grip for camera



CROSS SECTION DIAGRAM of mirror reflex shutter and through-the lens viewfinder system of the Arriflex 35. When shutter is in closed position, it reflects the image to the finder. In open position, image passes directly to the film. This is not a beam-splitting device and therefore 100% of the light goes to film and finder intermittently

As with the Arri 16, the through-the-lens focusing and viewing provided by the camera's reflex shutter system has been uppermost in popularizing the 35mm Arriflex among professional cameramen. This feature eliminates parallax problems and the need for multiple finders, masks, and rackover devices, and permits the cameraman to frame accurately and follow-focus critically by observing the scene exactly as it is being picked up by the camera regardless of focal length of lens used.

The mirror reflex shutter system is shown in the accompanying cross-section diagram. Heart of the system is the mirror reflex shutter itself, which rotates at a 45° angle to the axis of the camera lens. It is made of special optical glass and is front-surface coated. It rotates in a true single plane within a tolerance of plus-or-minus .003 mm. The shutter opening ,which is fixed, is approximately 180°, and in each phase of its operating cycle, 100% of the transmitted light reaches the film and the eye (through the finder tube) intermittently. This insures a bright finder image which permits focusing even at small f/ stops.

The film transport system is designed to produce rock-steady pictures. The claw mechanism provides not only the conventional pull-down of the film, but also registration pin action. It is so constructed that at the end of each pull-down cycle, the claw moves in a long horizontal pullout, which arrests all film movement in the camera just prior to the moment of exposure.

Further contributing to picture steadiness are the stainless steel precision-lapped film gate, cross stages that prevent "breathing" movement of film, rear pressure pad and side pressure-rail.

The standard 16-volt, 4-amp. "wild" motor that drives the Arriflex 35 is uniquely designed so that it also forms the hand-grip for the camera It is rheostat-controlled to provide continuous camera speeds from 5 to 50 frames per second. It is attached at the bottom of the camera and its base is a scaled knob for regulating the rheostat Exact filming speed is shown by a built-in tachometer.

In addition to the 16-volt variable speed motor described above, there is also available for the Arriflex 35 a 110-volt, 60-cycle AC single-phase sync motor with built-in footage counter. This is mounted on a platform containing geared mechanism for connecting to main drive shaft of camera.

There is also a governor-controlled 16-volt DC motor that turns the camera at 24 fps., and a single-frame 24-volt motor for time-lapse photography and for use on animation stands.

The standard 16-volt hand-grip motor can be operated from a variety of power sources, including automobile batteries. A 12-volt battery will run camera up to 24 fps.

Film magazines for the Arriflex 35 are available in two sizes: 200 ft. and 400 ft. The later, designed especially for color negative stocks, will actually hold 480 feet of black-and-white film. Magazines are of the single-compartment, displacement type and are equipped with loop-protectors. As with most detachable magazines, film is pre-threaded in a darkroom so that it takes but a few moments to mount them on the camera for use.

The camera's three-lens rotary turret affords instant interchangeability of lenses. It can be rotated easily by means of three turret grips which are coded in relation to the lens each turret stop places in taking position Because of the fine tolerances maintained in the finishing of the turret, any Arriflex lens will fit any Arriflex camera with accuracy and without the need to be individually "seated." The design of the turret makes it possible to mount the following three lenses without physical or optical interference: 28mm wide angle, 40mm or 50mm normal, and 75mm or 85mm telephoto lenses.

Two matte boxes are available for the Arriflex 35—an all-metal model, and an adjustable bellows type. The first is compact in design and provides two filter stages for 3″ x 3″ filters. It is recommended for aerial photography or where camera is to be used in exposed position. The leather bellows model is most efficient for general use on the studio sound stage or on location. Its boom is engraved with marks for adjusting it for use with wide-angle 28mm and 35mm lenses. A geared filter stage accepts standard 3″ x 3″ filters and permits easy insertion and removal of them.

While the Arriflex 35 was originally designed as a hand-held camera, increasing use among professionals ultimately led to design and production of sound blimps enabling the

Continued on Page 444

MODEL 1000 Sound Blimp for the Arriflex 35 designed to accept camera with sync motor and 1000-ft. Mitchell magazine, thus converting it to a full-fledged studio sound camera

OPEN VIEW OF THE Model 1000 sound blimp. Four doors give unlimited access to all components of the camera. Remote focusing control is extended to outside of blimp; also through-the-lens viewing feature is retained.

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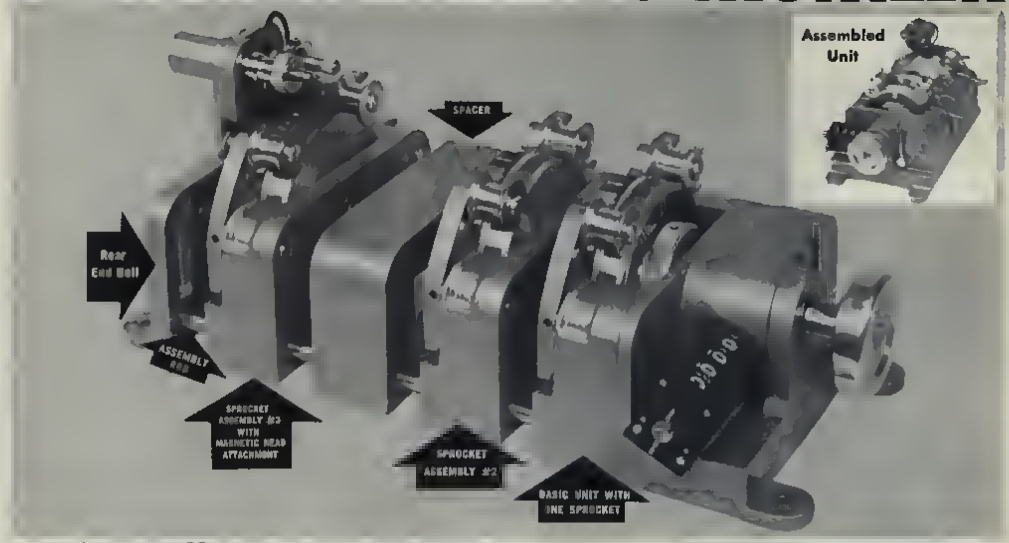

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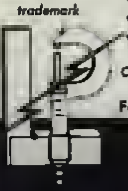

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INSTANTANEOUS FILM PROCESSOR

Processes motion picture film as it is shot and readies it for projection for closed circuit television viewing in less thon ten seconds.

By JOSEPH HENRY

CINE SPEED INSTANT FILM PROCESSOR shown here mounted on Maurer 16mm camera, processes film as fast as camera exposes it

A REVOLUTIONARY NEW motion picture film processor was introduced for the first time at a public showing June 1st at the Roosevelt Raceway in New York. The Instant Film Processor, a development of the J. A. Maurer Company of Long Island, N. Y., processes motion picture film instantaneously and simultaneously with the photography.

For the initial public demonstration, a ballet dancer was photographed in action with the processing unit attached to a Maurer 16mm camera. After shooting for approximately two minutes, the resultant film—photographed and processed—was rewound and viewed on closed circuit television. The film was shown at normal speed, slow motion and stopped on a single frame. The demonstration greatly impressed racetrack officials at Roosevelt Raceway who long have been interested in motion picture recording of race events.

In the accompanying photo, the Instant Film Processor is attached to a 16mm Maurer camera. In operation, after the film is exposed, is proceeds directly into the processor compartment instead of to a takeup reel in the camera. Exactly how processing and drying takes place is something the developers wish to keep secret at this time.

Frank Kelly, Sales Manager of J. A. Maurer, Inc., who explained the mechanics and features of the processing unit at the demonstration, said ability to process film simultaneously with the photography eliminates costs and the delay of laboratory development and provides an invaluable time-saving factor when filming spot news breaks.

The shooting-processing process takes about nine seconds from the time the film is exposed on the focal plane of the camera until it winds up, fully processed, on the equipment's takeup spool.

An alternative is provided in the final step so that the film can travel directly to the projector, instead of a takeup reel, so that twelve seconds after exposure, the photographed image can be viewed on a closed circuit TV screen.

A closed circuit TV system is an essential adjunct to the processor for the use for which it was primarily designed—that of race track patrol photography.

The film comes out of the processor fully processed to a negative, and rolls up on the takeup spool of the unit at the same rate it travels through the camera—either 24 or 32 fps. The film is projected as a negative on the closed circuit TV projector and electronically reversed so that the image becomes a positive picture on the video screen.

In the initial demonstrations, Eastman Tri-X negative was used and the results show the remarkable potentials of the machine because Tri-X, although having good tonal quality, fine grain, and superior speed, is about the most difficult film to fix and dry.

Picture quality is said to compare favorably with that of the average newsreel film, and the contrast range is ideal for television. The grain level is lower than racetrack film producers have been accustomed to seeing in photo patrol motion pictures, according to Richard M. Hanelin, Vice-president of Cine Speed, Inc., which handles film recording at Roosevelt Raceway.

Cine Speed sponsored and pioneered the Instant Film Processor ten years ago at the J. M. Maurer laboratories in Long Island City, and the company created the first night patrol film to be used in harness racing five years ago.

The Instant Film Processor is portable and is designed to work with most motion picture cameras presently on the

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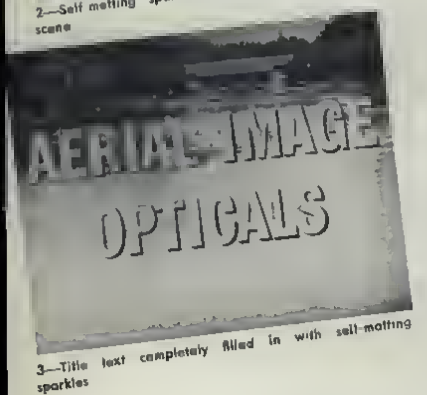
AERIAL IMAG

1—Art title over live scene.

2—Self melting sparkles filling in art title over live scene



3—Title text completely filled in with self-melting sparkles

By VERN W. PALEN

ONE THING TELEVISION has done for motion pictures is to accelerate and widen the production of animated films, especially for commercials and "spot" announcements. Today there are hundreds of animation studios throughout the United States, where only a few years ago one could count the number of active studios on the fingers of one hand And these were devoted mainly to theatrical film production.

One result of this regeneration has been the development of new and improved equipment for making animated films, which has made it possible to turn out such films quicker and more profitably

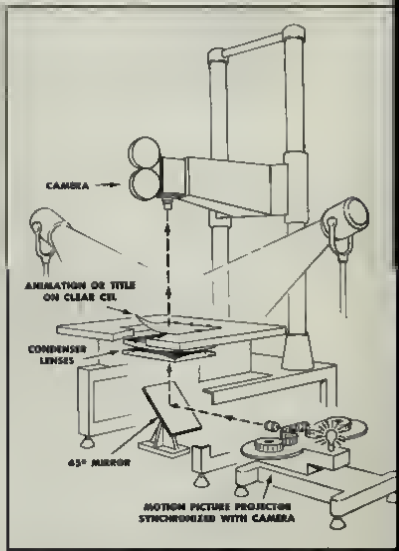
The demand for still further economies in the production of TV commercials has led to revival of an old technique which, with the aid of modern equipment, now promises important advantages for producers of theatrical and commercial film animation. This is the method of combining live action with animation, using the aerial image technique instead of resorting to use of traveling mattes

The term *aerial image* denotes an image in space formed by an optical system [1] It can be received on a ground glass, film, or other surface, or picked up by another lens system [2] In animated film production, aerial images are introduced by means of underneath projection, and the animation camera photographs a top-lighted cel and an underneath projected image simultaneously. The major advantage of the aerial image technique over the traveling matte system is that with the former, matte bleed is eliminated and there is no matte distortion—two of the big problems with mattes. The original quality is retained in the answer print because there are no film generations in between, no intermediate steps

The Animation Equipment Corporation, New Rochelle. N. Y., has recently introduced an aerial image unit for use with professional animation stands, which will be described at length in ensuing paragraphs.

According to reliable sources, an underneath projection unit was first

ABOVE ARE THREE frame enlargements from a TV commercial produced by Eastern Effects, Inc., NY, in which combination of aerial image and animation was employed. Live action background was aerial image by underneath projection (see sketch at right). Lettering was on acetate cel. Sparkles were gradually added to letters by hand between single-frame exposures.



HOW LIVE ACTION and animation are combined through use of Oxberry Aerial Image Unit (pictured at right) in conjunction with animation stand.

AND ANIMATION

Revival and refinement af an early-day animatian technique makes it possible to combine live-action and animatian in a single take faster and mare ecanamically than with other methads.

developed and used to produce animated films by Max Fleisher in 1925. Even though the technique is thirty-four years old, commercial equipment of this type became available only recently when John Oxberry designed and introduced his precision-built aerial-image projector.

For three decades, underneath projection installations were rare. Terry Toons, Inc. and Walt Disney Productions were privileged to enjoy this luxury because knowledge and experience made it possible for them to build their own units. Usually, these assemblies were constructed to handle one or two special film applications. Although sizable savings were realized in production time and cost, no serious attempt was made to use the technique on a broad scale.

With the advent of television and the immediate success of animated advertisements, a tremendous demand was created for quick and efficient methods for the production of these films. Today's vogue is to combine animated ads with current events and this requires mixing of live action with animated characters. New machines were necessary in order to obtain speed and accuracy that was impossible with conventional matte procedures.

John Bray produced the first animated film in 1913 and Max Fleisher published the first report on underneath projection in 1925. The unit he used consisted of a projector mounted

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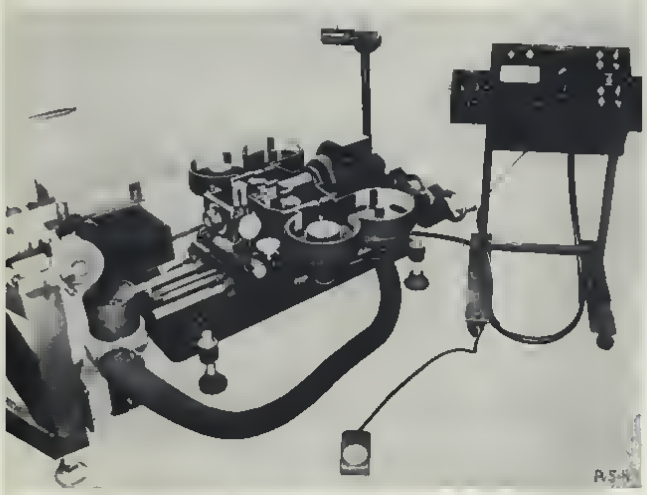
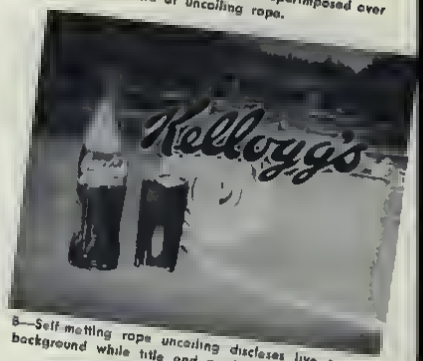


AERIAL IMAGE UNIT designed by John Oxberry for Animation Equipment Corp. At right is control console. Unit operates interlocked with the animation camera, thereby insuring complete sync.

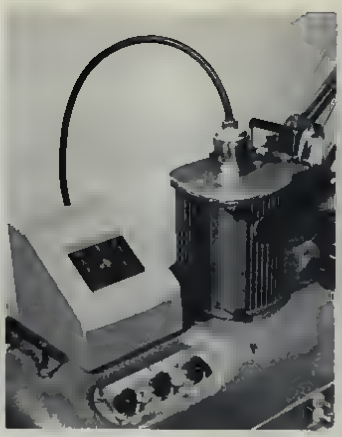
A—ART TITLE and product still photo superimposed over animated background of uncoiling rope.



B—Self-melting rope uncoiling discloses live scene in background while title and product remain.

C—Rope, completely uncoiled, discloses entire live scene, with product and title superimposed. Here, as in example on opposite page, live action background was provided via aerial image or underneath projection.

FIRST STEP is to replace regular projection lamp with low-wattage bulb and socket and attach it to light-tight lamphouse cover



AUXILIARY RHEOSTAT controls intensity of new lamp which becomes the printing light in the film duping process

COVER REMOVED from projector sound head reveals the exciter lamp which is used to print the sound track.

How To Dupe 16 mm Sound Films With A Projector

By JAMES A. OSWALD

LARGER LOOP in outside film prevents film jamming in gate, also insures alignment of sprocket holes of both films.

SUCCESS IN A VENTURE often provides incentive to carry on future and greater endeavors. The gratifying results achieved by the writer in early experiments in making duplicates of home movie films with an adapted 16mm silent projector serving as a printer, were eventually to be followed by a new and more challenging pursuit.

A natural curiosity was aroused as to the practicality of duplicating sound film — sound track and all — with a similarly-modified 16mm sound projector. Finding a method of reproducing a clear, audible rendition of the sound track was the major challenge in the conversion of a 16mm sound projector for such printing purposes. How this challenge was met is discussed in detail here.

Almost any make and model 16mm sound projector, with slight modification of the conversion outlined, lends itself to adaptation as a printer. The principle is the same. Because the printing procedure requires a bulb of much less intensity than the conventional projection lamp, the first step is to replace the regular projection lamp with a lamp of much smaller wattage. Here, an ordinary household 7½ or 15 watt light bulb suits the purpose. The tubular-shaped refrigerator or sewing machine lamp is also adaptable.

It is very important to align as close as possible the printing lamp with the projector's optical axis. This means that the filament of the bulb should center as nearly as practical with the aperture gate of the projector, which will serve as the printing aperture for the picture portion of the sound film. Since the new and smaller lamp will probably have a screw-type base, a conventional socket replaces the regular projection lamp socket. The socket and bulb combination are fastened to an improvised lamphouse cover made of plywood or hardboard, as pictured here, which replaces the original cover during the printing procedure.

An optional rheostat, connected in series with the printing lamp, increases the versatility of the converted projector as a printer. Being able to regulate the brilliance of the lamp permits compensation to be made where the films to be printed vary in density. Moreover, it makes it possible to use a wider range of raw film stocks.

The ability to vary the intensity of the printing lamp facilitates the reproduction of color films. Without changing lamps, copies of color films may readily be made in black-and-white,

Continued on Page 444

EDGE NUMBER ANY MOTION PICTURE FILM WIDTH

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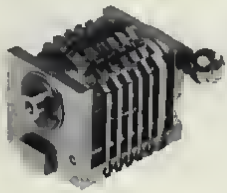
- A keeper holds the film in place for sync mark and spot coding
- The handle in front permits the operator to manually turn the numbering block to the desired position for a number change
- Running speed is between 80 to 110 feet per minute



NUMBERING BLOCK

- The numbering block generally consists of two letter wheels or one number and one letter wheel manually operated and four number wheels which move automatically and number from 0001 to 9999 All numbers can be reset by hand to begin at any desired number
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FILM PROCESSOR

Continued from Page 429

market by merely attaching it to the camera. Although available only for 16mm at the present time, developments are proceeding in order to provide a 16mm and 35mm processor in the near future.

The wide range of uses for this new processor will undoubtedly create markets for the equipment in many fields of motion picture production, from Hollywood sound stages to New York television centers. Schools, race tracks, industrial firms, TV newsreel producers and others now can shoot critical or classified subject material without the need to put the film through a commercial film laboratory

Tentative price of the Instant Processor is around $2250.00. "At the present time we have set up an organization to service sporting events," said Hanellin. "This incorporates a closed-circuit television system in conjunction with the Instant Processor. We intend to supply an entire service, including personnel, film, etc. The system is presently available on either purchase or a rental basis."

GENIUS WITH A CAMERA

Continued from Page 425

to give the appearance of movement to the land.

Neyman's early experience in film cutting has helped him over more than one hurdle. On one occasion he had to combine action filmed in two locations and make the areas appear as one. One spot abounded in interesting rock formations, but had no river. The reverse was true of the second location

To put the two areas together, Neyman shot his star, Efrain Ramirez, against the rocky setting and panned and tilted with him as he ran down an embankment. At the river he picked up the youth as he hurried down a second slope. The two shots were matched for action mid-way in the star's dash for the water. The result is a smooth transition from the stone pinnacles to the river bed.

Although Neyman's budget is slim by Hollywood standards, there is no shortage of equipment The crew is working with a rented Mitchell NC. A BNC will be used for several days at the end of the 13-week schedule. The company owns a Model Q Eyemo with many added refinements which will be used in remote areas.

Sound is being recorded on a Stancil-Hoffman 17½mm magnetic film recorder. Dialogue will be used as recorded, if it measures up to Neyman's standards. Otherwise it will be post-recorded. Background sounds will be dubbed in later from wild tracks.

A somewhat lengthy shooting schedule was arranged, because much of the filming would depend on the weather. Certain cloud effects have been needed for important scenes in the film Another contributing factor has been the unpredictable actions of the animals being used. The story calls for a bobcat, a mountain lion and a rattlesnake, among other wildlife

For example, when shooting on location recently, an uncooperative rattlesnake caused many re-takes. The crew had waited for most of the afternoon for clouds to blow into camera range. The time was used for rehearsal and the placement of equipment. The cages of two rattlesnakes had been moved into the cool air so that the reptiles would become more sluggish in their movements

Late in the day filming began. Neyman had spent a great deal of time placing and quieting the rattler Then as he took his place behind the camera, the action was started. As the camera boom moved in for a closeup of the snake, its rattles started to vibrate a warning But the script called for the snake to remain still.

Finally a second rattler was substituted and the shot was completed, but not before precious time and film had been lost.

An integral part of the crew's heavy equipment is a counter-balanced camera crane. The home-made apparatus is mounted on a 2½-ton military weapons carrier so that it can negotiate even the most hazardous terrain.

The crane was built at a total cost of $1,400 from scrap metal and spare parts It accommodates two men plus the camera and will rise to a height of 16 feet and descend below the level of the tire treads when the vehicle is parked on a hillside.

Few lights have been required for the production, because most of the action takes place outdoors Available for emergencies, however, are several banks of floodlights, a number of kleig lights and one large arc. A searchlight generator supplies the necessary power.

For the few interiors required, Ney-

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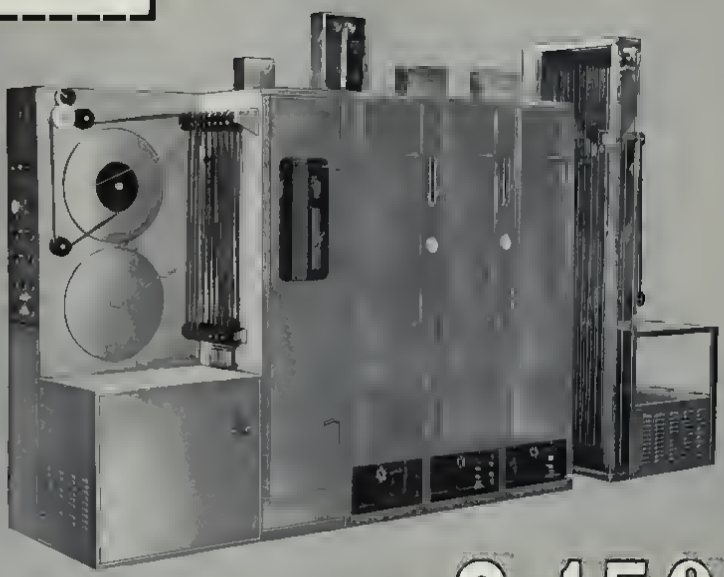

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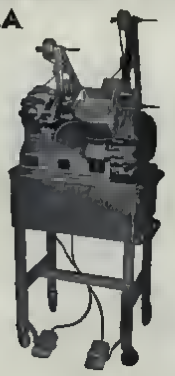

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man and his crew tore down an old weather-beaten split-plank house and reassembled it on a level site several miles off the coastal highway where no signs of civilization would be apparent in the background. The 100-year-old building was reconstructed with removable or "wild" walls to allow for a variety of camera setups. Most of the indoor shots for the picture were made in this building.

To keep a constant check on his progress, Neyman has installed two Holmes 35mm projectors in his headquarters at Big Sur. The whole technical crew and the actors assemble each evening to view rushes sent daily from General Film Laboratory in Los Angeles. Following the showings a conference is held to determine possible improvements in all phases of the production.

After several weeks of working together, members of Neyman's crew have caught his enthusiasm for the project. Many help out at extra tasks. Neyman's 19-year-old star, Ramirez, whom he discovered in a Monterey county high school, has taken an avid interest in editing. He also has helped Neyman coach the other Mexican actors in their native Spanish.

From the progress already made, Neyman's investors believe that they have found a remarkably gifted young man who is equal to the important task of bringing a major author's work to the screen. ■

AERIAL IMAGE

Continued from Page 431

under a table in whose center was an opening covered with translucent glass. A camera was suspended above the glass and the live-action image was projected onto the glass from below. A drawing on transparent material was then placed on the glass and the camera photographed both images simultaneously.

In 1939, Paul Terry introduced and patented the first aerial image underneath projector. He installed a stop-motion camera on an animation stand and mounted a hand-driven projector under the table top. It projected a live-action scene into a reflecting prism that bent the image 90 degrees upward into two 19-inch condensing lenses mounted in the table top.

Walt Disney used underneath projection in some of his animated films. He projected the animated film onto a 14 by 20 ft translucent screen, live acting was performed on stage in front of the screen, and a Technicolor camera recorded the sequence. Disney used the animated film as background for live action whereas underneath projection employs live action as background for animation.

The Oxberry aerial image unit illustrated here makes it possible to photograph a top-lighted cel and an underneath projected image simultaneously. It allows a small product to be animated as in puppet work and then to be superimposed over a projected live-action scene. The work is accomplished with single-exposure or one-pass methods whereas traveling mattes were previously required. Ride and registration problems are eliminated and production time is greatly reduced.

An aerial image can be photographed by the animation camera only when the camera is precisely positioned for a 10½ field on the table top (1 to 1). The aerial image is picked up without grain on 16mm or 35mm black-and-white film, or on color film when filters are used.

Since the aerial image is invisible to the naked eye, the camera can be racked over to permit alignment at the film plane by means of the ground glass reticle. The aerial image can also be viewed by placing ground glass or tracing paper on the table top. There is no loss of contrast because the aerial image is not affected by top lighting.

With the Oxberry unit, a ground glass is employed on the table top for zooms. It also permits masking out portions of a projected image where a commercial is to be changed without reshooting. Two exposures (two passes) are necessary with the ground glass image and zooms from 12 to 7 field may be made without picking up grain. The compound table cannot be moved when aerial or ground glass image work is photographed, since this would misalign the optical system. Table-top peg tracks may be used for shooting either type of image.

The mechanical and optical components of the Oxberry aerial image unit are coupled through electrical circuits to provide a compact self-contained assembly which is 42 in. long, 30 in. wide and 27 in. high. Normally, the aerial image unit is mounted on the floor to the right of the animation stand. If desirable, it may be placed in other positions providing the path of the projected image is not obstructed.

Film loading is simple since the projector is open on top and is easily accessible. Either 35mm or 16mm film can be handled because shuttles and sprocket assemblies are interchanged in a few minutes. Optical centers remain in alignment at all times even though film size is changed frequently. Four 400-ft. film chambers are provided, two for feed and two for take-up. Torque motors keep proper tension on the film for forward and reverse movements. Projector has fixed-pin plates that accommodate two films. This permits running two live-action scenes or one live and one animated film together.

Two films can be photographed simultaneously with an animated cel on the table top to give the same results obtained with two traveling mattes. The fixed-pin shuttle design eliminates the need for moving pins and is the only satisfactory method for high precision work. Speeds are limited to 700 rpm or below.

The aerial image projector is mounted on two ball-bearing sleeves that ride on ground rails. Travel is 8 in. from end to end and this makes it possible to convert from 35mm to 16mm work without moving the entire unit. The projector is moved with a lead screw and handwheel having a micrometer dial that permits positioning to within 1/1000th of an inch. Lamphouse accommodates bulbs ranging in size from 100 to 750 watts.

The optical system was designed specifically for the aerial image unit. Because efficiency is high, only a 100-watt projection lamp is necessary in working with a black-and-white or color film image. Since intensity is low, the light does not burn through opaquing on a cel and does not reveal brush marks. For special jobs, of course, the bulb size can be increased up to 750 watts.

In the lamphouse, an achromatic system is used instead of standard condenser lenses. Corrected for spherical, color and coma aberrations, the system permits straight through printing without a diffusing glass at 1-to-1 ratio. The achromatic installation delivers 22,000 foot-candles with a 500-watt bulb. This provides 30 to 50 per cent more light than when standard condenser lenses are used.

At the shuttle, an objective lens picks up the film image and projects it to a first surface mirror set at 45 degrees which diverts the image 90 de-

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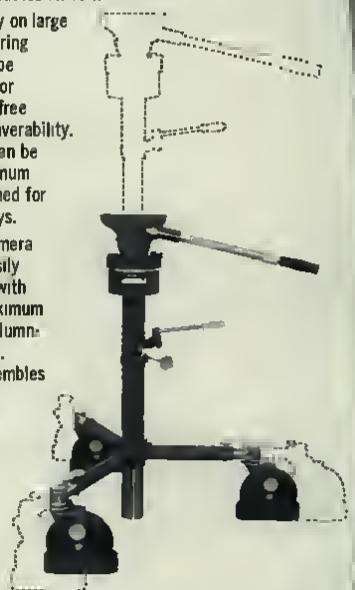

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grees into two rectangular 9-by-13 in field condenser lenses. The field lenses are specially designed and color corrected to provide a sharp 10½ field aerial image at the top surface of the upper condenser.

The image is picked up by the camera objective lens and is recorded on raw stock To eliminate the hot spot of the projected image that would be picked up on the ground glass, the projector is positioned at an angle off the optical axis of the camera.

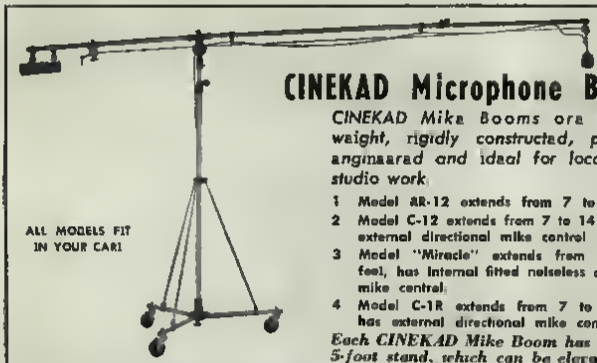
Operating on 120 volts AC, the electrical circuits are arranged so the stop-motion motors on the camera and on the aerial image projector can be synchronized. These two motors may also be indexed to run 180 degrees out-of-sync or may be operated independently both forward or reverse. The hook-up makes it possible to produce many special effects so that the animation stand really becomes a vertical printer. Switches for operating the aerial image unit are clearly defined and are located on a control panel which is easily accessible

Continuous or stop-motion step-printing can be handled by electrically synchronizing the camera and aerial-image motor units. This is done by switching the underneath projector to interlock position Both motors then operate simultaneously at the touch of a button With this arrangement, it is possible to do straight step printing or an animated cel may be dissolved on or off. Animated products and characters can be changed in the same live-action scene thus eliminating the need for retakes

Skip-frame work is possible when the two stop-motion motors are indexed 180 degrees out-of-sync The camera control button is pushed twice to advance the raw stock two frames for each single frame in the underneath projector Such a sequence can be repeated as often as desired and other skip-frame combinations are possible by manually operating the two stop-motion motors independently. Freeze-frame techniques can also be handled by independent operation of the stop-motion motors, forward and reverse. Similarly, ripples, wipes, flips and split images are easy to make with shadow-board accessories.

In everyday operation, the Oxberry underneath projection unit has been used to superimpose titles over live-action color scenes and has been widely applied for aerial and ground glass photography Results are excellent and show no loss of contrast and no pickup of grain. Live action scenes are sharp and titles are perfectly registered and are clearly defined. The high-quality optical system and precise design of the Oxberry aerial image installation are factors which make it possible to achieve superior effects in a fraction of the time normally required for matte methods ■

[1]Cameron's Encyclopedia of Motion Pictures.
[2]Morgan and Morgan's Photo Dictionary



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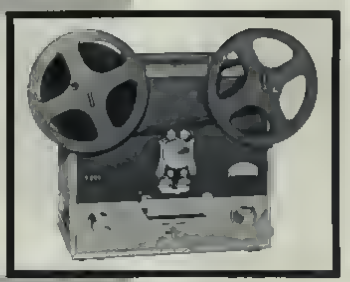

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TV NEWS CAMERA

Continued from Page 421

switching, metering, amplification or other standard operations had been introduced Portability had been achieved, but without material progress toward reduction in weight. The first model of the Portacon tended to render the cameraman round-shouldered But despite deformity he had achieved mobility. Transportation of camera gear

had been simplified if not lightened, and set-up time had been practically eliminated.

Experiments and developments of the initial model consumed several months. The unit was ready late in the summer of 1955 and put into use for the first time in rather spectacular manner. A crisis at the Oklahoma City municipal building, involving a strike of municipal garbage haulers, broke as a major news story on which all news media quickly concentrated. Its controversial nature emphasized the importance of obtaining factual statements from both sides—from city officials and the leaders of the move to unionize garbage haulers.

On its first day of use, the Portacon rolled out 2700 feet of film with sound. Horton ranged from side to side, recording statements and answers. The Portacon's advantages over conventional, immobile sound-camera gear were quickly demonstrated. An alert newspaper photographer snapped a candid of the unit in operation, an exposure that gave the illusion of a man with a camera for a head. This unique photo later became a full-page picture oddity for a national news magazine.

In the ensuing stages of the Portacon's development, some improvements were made quickly. The chronology of change becomes somewhat confused, since many alterations overlapped. In each case, however, it contributed to decreased weight, greater efficiency, and improved ease of handling.

The power pack was readily supplanted with a single-light-weight storage battery capable of operating the entire rig. A sheet-aluminum power box with fitted connectors for camera cables replaced the hard-rubber developing tank, and the entire power unit was reduced to less than half the size of the original. The behind-the-back element was quickly brought to its present shape and dimensions, approximately 3" x 5" x 7". Using any standard charging unit or any 12-volt auto electric system, the batteries can be recharged in 20 to 30 minutes to give power sufficient for a 2700-foot film run.

What to do about debulking the Auricon amplifier was obvious. Working with KWTV engineers, Horton developed the schematic for a transistor amplifier, housing it in another aluminum case roughly the dimensions of the camera base and about two inches deep. In later models, the lateral size has

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been somewhat reduced so the amplifier now actually is smaller than the camera base. As accompanying illustrations show, the amplifier was moved from the front overhang of the shoulder pod and placed under the camera. Thus, a dual purpose is served: to add to compactness and to raise the camera to a more favorable view finder position.

The amplifier can be fitted with dual microphone outlets, enabling the cameraman to conduct question-and-answer interviews while shooting. Sound track exposure control is on the left side of the amplifier for easy access, and a pilot light indicating unit readiness is inset in the amplifier case on the same side, near the front. Although wired circuits are used, the new amplifier could easily be produced with printed circuits.

Mounted at the left front of the amplifier is a three-inch cylinder that houses the combination VU-battery check-sound track exposure meter. The volume control knob is on the meter case, operable with the cameraman's left hand.

In early versions of the Portacon, on-and-off switching was a problem since conventional switch placement at the rear of the Auricon did not lend itself to easy manipulation. It was apparent that some kind of a trigger-grip switching plan was desirable, but the standard trigger grips—such as those made for Bolex silent cameras — could not provide efficient switching for the Portacon. Horton decided on a pistol grip switch. Mounted immediately under the amplifier, it enables the cameraman to control his entire camera operation with a single finger-pressure switch. Now, use of the Portacon requires only the central pistol grip switch and the volume control knob in operation. The precise control afforded by the pistol grip switch plus the improved amplifier design provide automatic sound "blipping" and eliminates starting and stopping "wows."

The last feature added to the Portacon made it a fully self-contained unit, with all the necessary components now neatly included in a single package. This is an automatic spring-loaded retractable reel for the microphone cord mounted on the lower end of the chest extension of the shoulder pod.

The Portacon has virtually perfect balance to the degree that it can be carried on the shoulder, leaving both hands free. When desired, the camera-amplifier-switch unit can be removed from the shoulder pod and the camera used hand-held. The unit is so precisely balanced that it will stand alone on the base of the pistol grip.

The Portacon is ideally suited to shooting with zoom-type lenses, because none of its construction features interfere in any way with the mounting or use of such lenses. The problem of changing film stocks, when going from interior to exterior shooting, can be eliminated by using one of the high-speed films, such as DuPont 931A or Eastman Kodak's Tri-X, and ND filters on the lens when shooting outdoors to compensate for the brighter exterior light.

For today's television newsreel cameraman-reporter, who must perform all his own photographic and sound recording chores, the Portacon is a boon. Some cameramen might complain that it doubles the number of assignments they can cover in a day — but then, some people are never satisfied. ■

EXIT RIGHT, ENTER LEFT

Continued from Page 422

tered easily once it is thoroughly understood and given proper attention. A vigilant cameraman can endear himself to the film editor by consistently delivering scenes that are directionally correct so they will "cut together" without the need for re-takes or having the lab reverse a scene from left to right or vice versa so it will fit the directional pattern of the sequence.

If screen stories could be presented in one continuous shot, there would be few directional problems. But they are made up of "bits and pieces," of many shots of various lengths filmed from different angles and often with different size lenses, then pieced together by a film editor. And because this is so, directional continuity is vital to the planning and execution of every shot in the script.

There are two basic types of directional continuity: *dynamic* and *static*. Dynamic concerns the actual travel or movement of subjects and vehicles on the screen. Static has to do with the direction people or objects *face* in more or less fixed set-ups.

"Mulling" directional continuity is one of the most serious mistakes in the book of movie making. Where the least doubt arises during shooting, a veteran cameraman or director will "shoot it both ways" for protection — a costly procedure that can be avoided if care is taken to establish a definite direction pattern.

Dynamic directional continuity, which we shall discuss this month, can be divided into two categories: *constant* and *contrasting*. The first is where subject movement is constant in relation to the camera, i.e., moves in one direction only. In the contrasting pattern, action moves both ways: groups of people or vehicles move toward or away from each other.

It will simplify matters to think of directional continuity in terms of "comings and goings"—the appellation given the technique by early-day movie makers. For example: the hero is either *going* somewhere or *coming* back to where he started from. If the direction of travel is decided before a frame of film is shot and care is taken to photograph the hero coming and going in opposite directions, there is likely to be no trouble as far as directional continuity is concerned. Say the hero leaves the ranch and goes to town. This action may be established moving left to right on the screen. Thereafter, whenever the hero is to be shown *going* to town, he will travel left to right on the screen regardless of the lens angle, whether in long shot or closeup, or even if only the horse's feet are shown in the scene. In scenes showing him *returning* to the ranch, direction of travel will be reversed, and he will be moving from right to left.

A contrasting directional pattern is used to depict opposing actions moving toward each other. For example, the hero leaves the ranch (going left to right). The heroine is shown in the next scene riding right to left—suggesting that she is riding toward and will intercept the hero. Unless the audience is informed through dialogue or pictorial means that the hero and heroine are riding *away* from each other, it will quite naturally assume that they are riding toward each other. Such is the power of properly oriented directional continuity.

Contrasting direction of movement can be uesd to build suspense, imply an impending clash, or contribute drama through forceful opposition. Suspense can be built up by depicting the hero and villain approaching each other in separate shots—*if* directional continuity is correct for each shot and there is skillful cutting back and forth between the shots of opposing action. A single shot is rarely if ever suspenseful,

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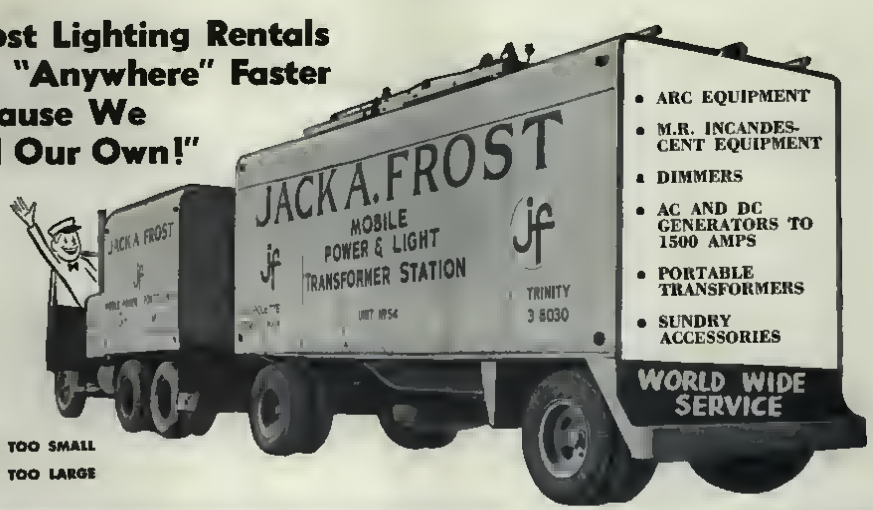

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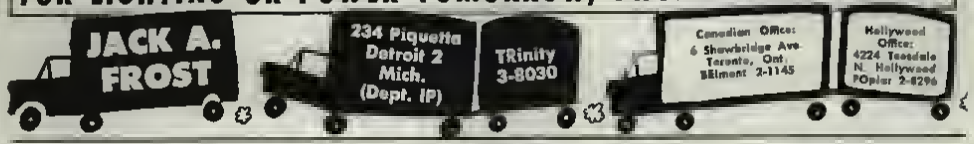

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clashing, or dramatic in itself. Unless the cameraman or director understands directional continuity and uses it properly, the film editor is severely hampered in his efforts to cut the footage into a dramatic picture story.

Keeping directional continuity straight may seem like a simple task, but it is full of pitfalls because of the method by which movies are generally produced. Long shots may be photographed one day while intercutting closeups are made on another; or an entire sequence of traveling shots may be filmed at one time with the action moving in both directions. Unless notes are carefully made for each take, directional mistakes may result.

A good rule to remember when shooting each scene in a picture is *never cross the action axis with the camera.* The action axis is the subject's line of travel. (See accompanying diagram). When shooting is in progress, the subject should be kept moving in the same direction from the camera viewpoint. If the camera is later placed in another spot at the location but on the opposite side of the action axis, even though the subject continues to

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move in the same direction with respect to the prevailing north-south, east-west points of the location, subject will appear on the screen travelling in the opposite direction.

A simple expedient for keeping direction straight when shooting a complicated action sequence is to make a diagram of the scene with the subject's position prominently marked, and an arrow indicating the direction of movement indicated in the script. This will serve as a quick reference guide when establishing subsequent camera setups.

It is well to remember that we are a "left-to-right" people. We think that way because we read that way. Some cameramen and film editors may disagree with this, but generally speaking, anything moving in a left-to-right pattern is easier to follow and to view. So, if there is a choice—on static scenes or other shots where the camera is panned across buildings, scenery or other inanimate objects—pan the camera from left to right.

When shooting moving objects or people, have them enter the frame, cross over, then exist. If you use this clean-cut entrance-and-exit technique, the film editor can pick up the action at any point for his match cut. Nothing is more difficult to cut than travel shots in which the moving object is picked up in the center of the frame and left there during the entire scene. It is possible to cut-in closeups on such shots, but they cannot be strung together because of the absence of proper entrances and exits. Where a scene is a pan shot, have subject enter the frame as shooting begins, pan with it for the necessary time, then have it exit at the opposite side. In shooting continuous travel it should be remembered that when a subject exits right it should enter the scene in the next shot at the left of the screen—or vice versa.

One should always make note of the exit pattern or direction when a shot is completed so that when it comes time to shoot the next entrance—even days later—it will coincide with the established travel pattern in the correct direction. Some directors go around mumbling: "Exit right; enter left." It's their way of reminding themselves of the basic rule governing screen direction.

If the script calls for an airliner to fly from Los Angeles to New York, it should be photographed flying left to right. This conforms with the direction on conventional maps of the U. S. which show Los Angeles at the left and New York at the right.

A ship shown on the high seas going from Europe to the United States should be photographed moving right to left on the screen—traveling east to west. The cameraman and film editor have a cine choice on north and south movements, since up and down screen movements are a bit difficult to handle, but when one direction is established, the opposite movement must be used for the other.

The question naturally arises: "Why can't we shoot the moving object from the other side going in the opposite direction?" Of course you can! But people have been conditioned to thinking in terms of map directions: north is up, south is down, west is left, and east is right. So, for smooth directional continuity go along with the map and keep your audiences happily oriented.

Any logical change in movement direction should be clearly indicated on the screen. There are times when this is overlooked, especially when subsequent script or editing changes require the subject to move in a direction opposite that originally filmed. Such contingencies can be met by making head-on and tail-away shots at time of shooting that will show the subject moving straight toward or directly away from the camera. This simple expedient can be used where the travel or movement is in either direction, or to bridge shots where action moves in opposite directions. As a matter of course many cameramen shoot such protection shots just in case they are needed later. Such shots also can be used to open and close action sequences. (Open with a head-on shot, then cut to cross-screen movement, and finish with a tail-away shot for the final fadeout.)

Cut-away closeups can also come to the rescue in editorial situations such as described by momentarily distracting the audience so that unavoidable changes in direction on the screen will go unnoticed. Typical is the shot in which a person is shown turning his head as if watching the moving object change direction. A cut-away shot of this type can be filmed later with the subject framed against the sky or some nondescript background.

The one proper method, however, for presenting moving action is through faithful continuity of screen direction when scenes are being photographed. Such cine crutches as shooting protection shots both ways, distraction cut-

aways, or neutral head-on or tail-away shots are generally acceptable for documentary, newsreel or nontheatrical films. But photoplays, which depend on the firm establishment of places, direction of travel and correct matching of action, should always be photographed along a definite directional continuity plan that is never altered for any reason during the production. •

(To be continued)

"ANATOMY OF A MURDER"

Continued from Page 417

able camera carrier. Luckily we found a "low-bed" truck designed for moving heavy machinery, the bed of which, as its name implies, being about 15 inches from the ground. On this we mounted camera, tripod, lights, sound recorder, and crew. The "low-bed" was then hitched to a prime mover which in turn was connected to a portable generator, and away we went. Rube Goldberg would have envied this incongruous assembly, but it enabled us to get the shot.

The most difficult scenes to film, perhaps, were those staged in the local County Jail. The action took place in a small cell, too narrow even to permit the entrance of a crab dolly. But the problem was soon licked by our grips who whipped up a wooden dolly barely 30 inches in width. A wag, observing the situation, quipped: "Why not just release the prisoners?"

Lest it be construed that we shot entirely indoors on this location, I'd like to mention one scene we shot on the shores of Lake Superior, where we utilized probably the heaviest and the greatest number of props ever introduced in a single shot. The site was a small hot dog stand. The scene itself was simple: Jimmy Stewart and Arthur O'Connell eating hardboiled eggs. However, in order to give it "production," Mr. Preminger asked for and got in the background an over-head iron ore loading crane, a diesel locomotive and eight cars, and seventeen automobiles — indicative of the wonderful cooperation we received from everyone on this Michigan location.

A flock of seagulls added further authenticity to the scene. These gullible extras were lured into camera range with thirty pounds of fish scattered along the water front, and performed perfectly on cue.

Sort of "worked for scale," you might say. ■

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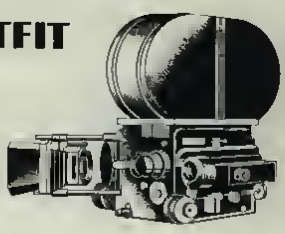

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ARRIFLEX 35

Continued from Page 427

camera to be used for professional sound film production. Available are the Model 400 and Model 1000 sound blimps. The former is designed for the Arriflex 35 with sync motor and 200-ft. or 400-ft. magazines. The important reflex viewing system of the camera is retained. The regular camera door with its optical system is removed and replaced with a special cover, which connects to the optical viewing system built into the blimp. Follow-focus is then accomplished by means of either of two controls—one located at the front side and the other at the back of the blimp. These controls connect directly to the focusing mount of any lens in taking position that is equipped with Arri follow-focus "wings." No gears are required around the lens mounts. An over-size focusing scale for any lens in use can be set behind, and viewed through, the control window located over the forward focusing knob.

Other observation windows are conveniently located to permit reading the diaphragm, viewing the footage counter and checking the tachometer. The lens window is made of optically flat glass, shielded by a detachable, adjustable matte box. Two heavy-duty handles facilitate lifting and carrying.

A fingertip dial permits the shutter to be turned over manually for preliminary focusing. A tape-measure hook is provided in the film plane. A pulsating pilot light indicates when the camera is in operation. It takes but a few minutes to convert the Arriflex 35 from a hand-camera to a studio sound camera, or vice versa. No special tools are required.

The Model 1000 sound blimp is designed to accept the Arriflex 35 with synchronous motor and 1000 ft. Mitchell magazine. It actually converts the Arriflex 35 into a full-fledged studio sound camera. It features remote focusing drives from three positions and also remote diaphragm setting. The advantages of through-the-lens focusing are maintained.

A discussion of the Arriflex 35 would not be complete without mention of the more-recently introduced Arricord-35. This is the basic Arri 35 with equipment added to enable camera to record picture and sound simultaneously. Design of the Arricord is said to have resulted from a growing demand for a compact, portable double-system sound recording camera for use in newsreel filming and sound film production on location where portability and economy are important factors.

The magnetic recording unit is mounted on right side of the camera and joined to the camera's mechanism by a special gear drive so that the camera motor operates both components. Recording medium is perforated 17½mm magnetic recording film. The complete Arricord outfit—camera-recorder, amplifier, and battery case—packs easily into three relatively small carrying cases. In actual operation the Arricord is handled much the same as a conventional single-system optical sound camera. The end products, however, are (1) a negative film, and (2) a separate magnetic sound film.

Ever since Arriflex became a household word in the field of professional motion picture production, Arriflex cameras have consistently been improved and re-designed to meet the needs of producers in the most exacting fields of motion picture production. The four models, exclusive of the Arricord, previously mentioned attest to this. Now, Arnold & Richter, West Germany, manufacturers of the Arriflex, have recently announced still more improvements in the Arriflex 35 and an advanced model known as Model IIBV. The fIBV is identical with the Model fIB except that the former now features a variable shutter. This is a secondary shutter which is located behind the mirror reflex shutter, is calibrated in degrees which can be observed through the taking lens opening when the lens is removed, and may be closed down to zero. This important new feature further expands the usefulness of the 35mm Arriflex camera, particularly in recording sports events, missile work and for photo-instrumentation.

Back to the basic Arriflex 35 (Model IfB)—the camera with normal lenses, wild motor, matte box and 400-ft (unloaded) magazine weighs about 13 pounds. Price of the camera, including 16-volt "wild" motor, battery cable, but without lenses, matte box or magazine is about $1,645.00. The Arriflex Corporation of America, 257 Park Avenue South, New York 10, N. Y., is exclusive U. S. distributor.

16MM FILM PRINTER

Continued from Page 432

and even in color, if the proper compensating filter is employed between the light source and the aperture gate.

Reproducing sound tracks with an improvised printer is somewhat more of a ticklish proposition than that of merely printing the picture alone. For a simple, yet effective, way of accomplishing this it was concluded that utilization of the projector's exciter lamp was the best method. The exciter lamp which casts a beam of light directly through the film's sound track, onto the photo electric cell, is almost made-to-order as a printing lamp. In addition, its location on the projector is ideal for the function. The fact the exciter lamp is small in size, with its brilliance conveniently varied by the projector's own built-in volume control, are additional assets.

When printing the picture portion of a film, the degree of illumination necessary for proper exposure of the sound track is determined only by actual test.

By keeping a detailed record of the results obtained through systematic altering of exposure of sound and picture through various segments of a test reel, the data acquired will serve as a guide for future printing operations. Should stray light emanate from the lamphouse, the sound head, or other part of the projector housing, it should be masked out with black photographic masking tape before either the testing or the final printing process is begun.

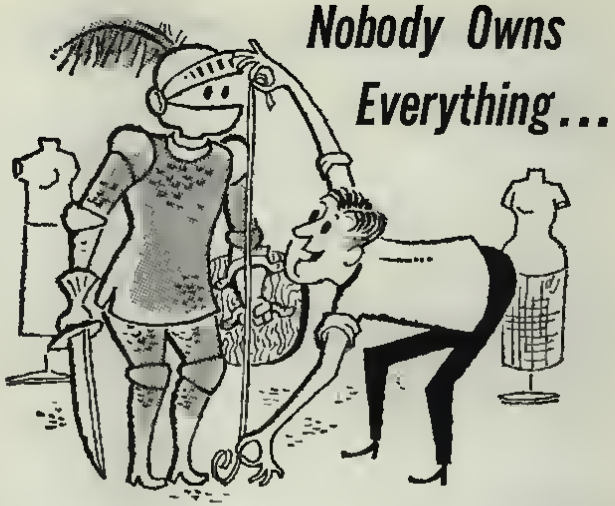
It is well at this point to elaborate on the more mechanical aspects of the film printing procedure. The process demands, of course, that the two emulsions — the original, and the one onto which the print is to be made — be placed in contact with one another in such a manner that exposure to the light source will reproduce the picture image and that of the sound track from the original, onto the printing stock. This poses no problem whatever for the still photographer accustomed to developing and printing his own pictures. Others will find the procedure clarified in the paragraphs to follow. All actual printing operations are naturally carried on in the darkroom, under the protection of a safelight ade-

quate for use with the particular type raw film stock being employed.

The projector's own film transport system is used in advancing the two strips of film past the printing lamps to make the exposure. With the absence of a second set of reel arms on the projector to accommodate the additional film, however, it becomes necessary to wind the two films on the same reel for the printing process. This also must be done in the safety of the darkroom. It is done in such a way that, when threaded through the projector, the two films will be in direct and constant contact with one another, i.e., emulsion to emulsion. When the films are threaded through the projector, the emulsion side of the original film should face away from the light sources; the emulsion side of the future print, toward them. In spooling, special care need not be exercised in the alignment of the sprocket holes of the two films with each other. Misalignment is readily compensated for when the projector is threaded.

Threading the projector for printing is much the same as threading it for normal usage. It is advisable to leave a larger-than-normal loop around the upper sprocket in the film traveling on the outside. This is a preventative against jamming. Also, the variance in loop size facilitates correcting any misalignment of the sprocket holes of the two films that may have resulted when the films were spooled together on the same reel.

Precise contact of the two emulsions for printing the picture part of the film is assured through the normal tension of the pressure plate at the aperture gate. Care also should be taken that the two films are equally taut and in contact with each other as they pass the exciter lamp aperture, where the sound track is printed. Once established, proper contact and taut-



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1782 North Orange Drive
Hollywood 28, Calif.

ness is maintained through the regular function of the projector's film advancement mechanism. Always test the mechanism for proper threading of the film by first turning over by hand several times, before starting the motor.

If the exciter lamp will light on the projector-printer with the motor speed control in the "silent," as well as the "sound," position, it is preferable to set it that way for the printing process. The slower "silent" speed acts as a further detriment to film jamming, while allowing a longer exposure duration for the printing itself. The fact that with some 16mm sound projectors it is necessary that the speed selector switch be placed in the "sound" position in order to illuminate the exciter lamp, is no major handicap to their doubling as printers, however. And in cases where it is required to turn on the projector amplifier before the exciter lamp can be lighted at all, the solution is obvious. Do not operate the printer for more than several minutes at a time without an adequate "cooling off" period. This, even though the heat dispersed by the small lamps of the improvised printer will in no way parallel that dissipated by the projector when used conventionally.

Almost any film stock can be used for printing as "duping" including the reversal types. The commercial, bulk varieties are strongly recommended, however, not only for reasons of economy, but also because of the broader selection of available emulsion types and speeds from which to make a choice. The finer grained varieties are usually preferred for printing purposes. Bulk film is packaged for darkroom use, consequently it must be handled accordingly. Bulk film comes wound on a flangeless core. For convenience in handling it is a simple matter, in the darkroom, to spool such film on projection reels or camera spools.

When spooling bulk film for printing purposes bear in mind that the amount of footage that can be accommodated at one time in the printing process with the improvised printer will equal one-half the total capacity of the projector, due to the displacement of the second strip of film.

It is not implied here that a modified 16mm sound projector is capable of producing prints rivaling in quality those made on a professional motion picture printer. There is a wealth of photographic knowledge, however, to be obtained by the serious home movie enthusiast in experimenting with the film printing process, to say nothing of the surprisingly good results that can be had.

In conclusion, a final word of precaution with regard to the duplicating process: Films bearing a notice of copyright should not be reproduced without written permission of the copyright owners. •

INDUSTRY NEWS

Continued from Page 390

studies of military equipment and materials.

The Floodflash lamp is 5½ inches in height—identical in size to the Type #3 flashbulb, which is the most powerful presently being manufactured. List price of the lamp is under $2.50, and supplies are now generally available, according to Sylvania.

• • •

Indicative of the unrelenting progress being made by video tape, there are today almost 100 TV stations throughout the U. S. equipped with VT recorders. Each station represents a video tape program production source, with many stations already producing taped productions for syndication—and marketing them.

Most such shows, however, are of the low-budget type, such as "Divorce Court" and similar courtroom dramas. But with the steadily expanding market, it is likely video tape producers will go in for higher budgeted shows in the near future.

• • •

Hollywood Film Technicians Local 683, IATSE, will send 50 of its members to Columbia College for schooling in video tape techniques. Union will pay tuition for those members who graduate in the final of three courses. Technicians will attend classes on their own time on Saturdays with each of the three courses covering a period of 14 weeks. •

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PHOTOGRAPHIC ASSIGNMENTS

Continued from Page 408

N.B.C

ALAN STENSVOLD, ASC, "You Bet Your Life"* with Groucho Marx. Bob Dwan and Bernie Smith, directors

PARAMOUNT

CHARLES LANG, Jr , ASC, "One-Eyed Jacks" (V'Vimon & Color; Pennebaker Prods) with Marlon Brando and Karl Malden. Marlon Brando, director.

LOYAL GRIGGS, ASC, "A Visit to a Small Planet" (Hal Wallis Prod.) with Jerry Lewis and Earl Holliman. Norman Taurog, director.

DANIEL FAPP, ASC, "Li'l Abner" (Technicolor) with Peter Palmer, Stubby Kaye and Julie Newmar Melvin Frank, director

PARAMOUNT SUNSET

RAY FOSTER, ASC, Commercial* (T.V. Commercials, Inc.)

STANLEY CORTEZ, ASC, "Women Confidential" (Imperial Picts.) with Mamie Van Doren and Richard Coogan Edw. L. Cahn, director

REVUE STUDIOS

MACK STENGLER, ASC, "Leave it to Beaver"* (Gomalco Prods.) with Barbara Billingsley and Hugh Beaumont. Norman Takar, director.

LIONEL LINDON, ASC, JOHN RUSSELL, ASC, "Riverboat"* (Revue Prods.)

BENJ. KLINE, ASC, "Wagon Train"* with Ward Bond, Commercials.* (Revue Prods)

ELLIS THACKERY, ASC, "State Troopers"* (Revue Prods.) with Rod Cameron. "Wells Fargo"* (Overland Prods.) with Dale Robertson Sidney Salkow, director, "Cornnada 9"* (Revue Prods., shooting in San Diego)

JOHN RUSSELL, ASC, LIONEL LINDON, ASC, BENJ KLINE, ASC, ELLIS THACKERY, ASC, WILLIAM SICKNER, ASC, "S A 7"* (Revue Prods)

BENJ. KLINE, ASC, LIONEL LINDON, ASC, "Markham"* (Revue Prods) with Ray Milland.

JOHN RUSSELL, ASC, LIONEL LINDON, ASC, "Alfred Hitchcock Presents"* (Revue Prods)

ELLIS THACKERY, ASC, JOHN RUSSELL, ASC, LIONEL LINDON, ASC, "Mickey Spillane's Mike Hammer"* (Revue Prods.)

WILLIAM SICKNER, ASC, "Bachelar Father"* (Bachelor Prods) with John Forsythe; "Clock Watcher"* (Pilot; Revue Prods.)

JOHN WARREN, ASC, Commercials* (Revue Prods.)

LIONEL LINDON, ASC, "Laramie"* (Revue Prods.) "General Electric Theatre"* (Revue Prods.) John Rich, director

ELLIS THACKERY, ASC, RAY RENNAHAN, ASC, "Whispering Smith"* (Revue Prods.)

RKO GOWRR

ROBERT PITTACK, ASC, "Ann Sothern Show"* (Desilu Prods.) with Ann Sothern.

HENRY CRONJAGER, "Whirlybirds"* (Desilu Prods.) with Kenneth Tobey and Craig Hill.

ROBERT de GRASSE, ASC, "Westinghouse Desilu Playhouse"* (Desilu Prods) Jerry Thorpe, director.

UNIVERSAL-INTERNATIONAL

RUSSELL METTY, ASC, "Spartacus" (Technirama; Bryna Prods.) with Kirk Douglas and Laurence Olivier, Anthony Mann, director.

RKO PATHE

LOTHROP WORTH, ASC, "The Real McCoy's"* (Brennan-Westgate Prods) with Walter Brennan Hy Averback, director.

WALTER STRENGE, ASC, Commercials*

HAL ROACH STUDIOS

EDWARD FITZGERALD, ASC, "The Gale Storm Show"* with Gale Storm and ZaSu Pitts. William Seiter, director.

TWENTIETH CENTURY-FOX

FRANK REGMAN, ASC, "The Perry Mason Show"* with Raymond Burr

CHARLES CLARKE, ASC, "A Private's Affair" (C'Scope & Color) with Christine Carere and Sal Mineo. Raoul Walsh, director.

LEON SHAMROY, ASC, "The Blue Angel" (C'Scope; Jack Cummings Prods.) with Curt Jurgens and May Britt. Edward Dmytryk, director.

WILLIAM MELLOR, ASC, "The Best of Everything" (C'Scope & Color; Jerry Wald Prods.; shooting in N Y) with Hope Lange and Stephen Boyd. Jean Negulesco, director

KAY NORTON, "The Oregon Trail" (Emfeld Prods) with Fred MacMurray and Bill Bishop. Gene Fowler, Jr., director

THOMAS TUTWILER, ASC, "The Oregon Trail" (2nd Unit.)

FRANK REGMAN, ASC, "The Perry Mason Show"* with Raymond Burr

MAURY GERTSMAN, ASC, "Adventure in Paradise"* with Gardner McKay.

CHARLES VAN ENGER, ASC, "Man Without a Gun"* with Rex Reason and Mart Mills.

LLOYD AHERN, ASC, "How to Marry a Millionaire"* with Barbara Eden, Marry Anders and Lisa Gaye.

WARNER BROS

HARRY STRADLING, ASC, "A Summer Place" (Technicolor, shooting at Monterey) with Richard Egan and Dorothy McGuire. Delmer Daves, director.

JAMES DROUGHT, Commercials*

LUCIEN BALLARD, ASC, "The Bramble Bush" (United States Picts.) with Richard Burton and Barbara Rush Delmer Petrie, director.

CARL GUTHRIE, ASC, "Yellowstone Kelly" (Technicolor) with Clint Walker and Andra Martin. Gordon Douglas, director.

JOHN SEITZ, ASC, "Guns of the Timberland" (Technicolor; Jaguar Prod.) with Alan Ladd and Jeanne Crain. Robert Webb, director

GEORGE FOLSEY, ASC, "Cash McCall" with James Garner and Natalie Wood. Joseph Pevney, director

RALPH WOOLSEY, ASC, HAROLD STINE, ASC, EDWIN DUPAR, ASC, "77 Sunset Strip"* with Efrem Zimbalist, Jr

EDWIN DUPAR, ASC, RALPH WOOLSEY, ASC, "Colt 45'" with Wayde Preston.

CARL BERGER, ASC, "Lawman"* with John Russell

WESLEY ANDERSON, "The Alaskan"*

RALPH WOOLSEY, ASC, PERRY FINNERMAN, "Bourbon Street Beat" (pilot) with Richard Long

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MONROE ASKINS, "All God's Children" (Yamin Rowland) with Rita Moreno and Mark Damon Richard Bare, director.

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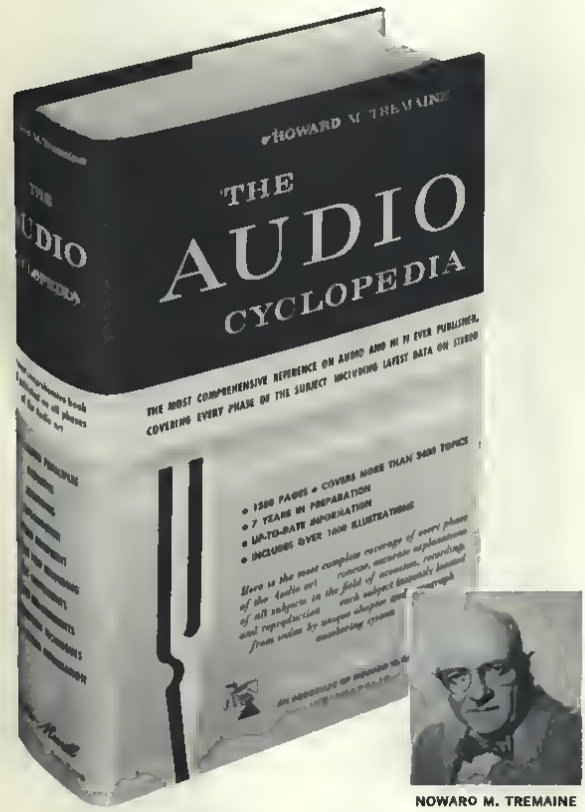
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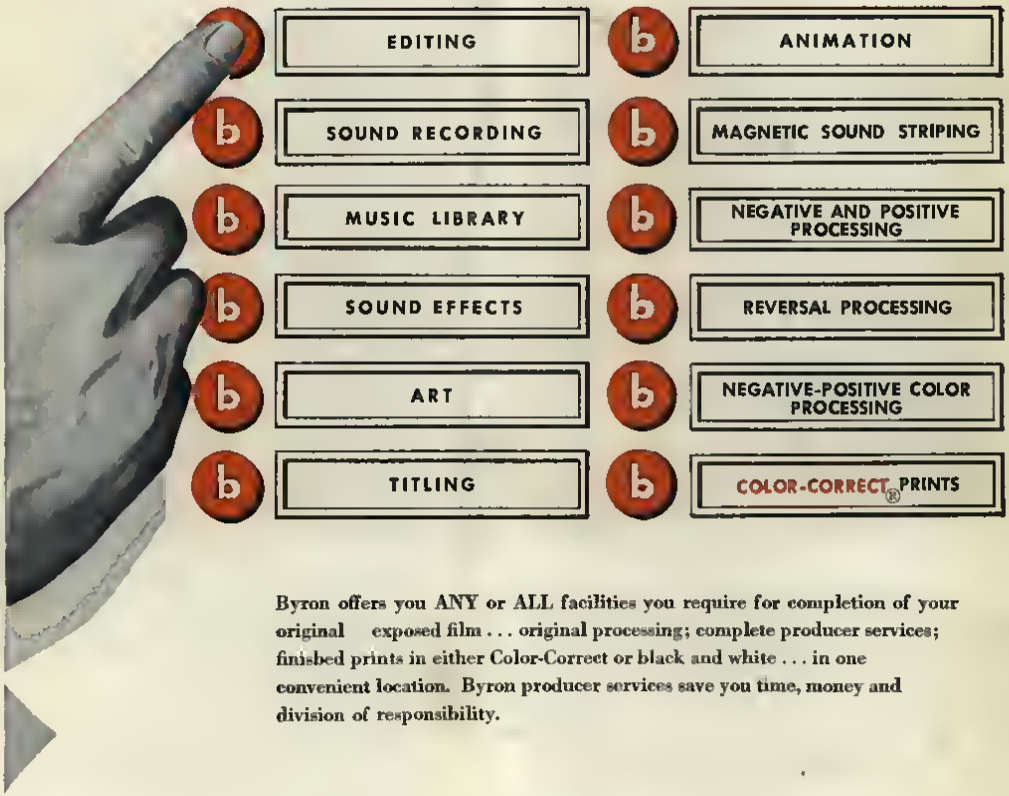

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